

MAY 19 1924

AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

Vol. 50
Number 20

PUBLISHED WEEKLY AT 239 WEST 39th STREET
NEW YORK, MAY 15, 1924

35c. a copy
\$3.00 a year

ATWATER KENT

Makers of
THE WORLD'S HIGHEST GRADE IGNITION
STARTING AND LIGHTING



The dependable performance
of ATWATER KENT Electrical
Equipment for motor cars is
the result of the extreme care
and attention given to every
detail:— correctness of design,
sturdiness of construction and
accuracy of manufacture.

ATWATER KENT MFG. COMPANY
4949 STENTON AVENUE
PHILADELPHIA, PA.

What about those "hole at a time" operations?

Without question, your production engineers have spent thousands of dollars to maintain the highest efficiency with low costs, on those drilling jobs that can be handled with jigs and fixtures on multiple spindle stationary types of drilling equipment. But not all drilling jobs in automobile construction can be handled in multiple—what about those holes that of necessity must be drilled one at a time during course of assembly? That's where production costs can climb way out of proportion to labor costs, if highly efficient portable electric drilling equipment is not provided for your mechanics. There's no economy in saving on your multiple drilling operations and permitting indifference to saving in the selection of the equipment for those "hole at a time jobs."

The use of U. S. Portable Electric Drills will keep your costs low on these drilling operations due to their many exceptional features, such as the efficient direct drive that transmits *all* the power to the driving spindle. There's minimum power loss with a consequent reduction of power costs for drill operation.

Send for catalog 21-A which describes the complete U. S. line.

*Jacobs
Chucks
Standard
Equipment*



Type PEP—Capacity 5/16" in metal, 7/16" in wood. Designed primarily for body building use. Operates on direct or alternating current. Ball bearings throughout. Speed under load—1100 R. P. M.

**The UNITED STATES
ELECTRICAL TOOL CO.
CINCINNATI, OHIO.**



District Sales Offices and Service Stations:

Boston
Buffalo
Chicago
Cleveland
Columbus

Detroit
Houston
Indianapolis
Kansas City
Milwaukee
Minneapolis

New York
Philadelphia
Pittsburgh
St. Louis
Toledo

Complete stocks carried in all Service Stations.

**UNITED STATES
Portable Electric
DRILLS**



AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

VOL. L

NEW YORK—THURSDAY, MAY 15, 1924

No. 20

Will Car Prices Go Up?

*Increased sales cost and decreased production
may result in upward movement.*

IT looks as if car prices would go up. There may be a general advance about July 1 or shortly thereafter. That is the conclusion which may be reached from a study of the present economic situation of the industry as a whole and from statements made recently by prominent executives. There are sound reasons for this trend.

Conditions within the industry indicate a need for some readjustment all along the line. Manufacturers seem to have staked too much on the power of quantity production to reduce costs. If selling were an automatic process and demand did not vary, increased quantity would continue to reduce costs indefinitely. But car buying does vary considerably. A point seems to have been reached at which the cost of selling additional output has mounted so high as to offset any further manufacturing economies which might be obtained.

For a long while profits increased in proportion to volume. Then the tide began to turn and greater output failed to bring greater returns to the treasury in many instances. It has become necessary to consider a large number of factors in seeking profits. Volume production alone won't do the trick.

IF prices do rise about the middle of the year, basic economic considerations will be responsible for the move. The fiscal year of many automobile concerns ends then, making it a logical time at which to introduce price changes. New models will be coming out, as well, to help make the transition easier. The news pages of this issue tell the story of the latest developments in the price situation. Further action seems likely in a few months.

The effect of slightly higher prices on sales is difficult to judge beforehand. Whether or not as many cars are sold is not nearly so important as whether profits are made. One car sold at a profit to the manufacturer, the distributor and the dealer does more for the progress of the industry than do three

cars sold at a loss to one or another of these distributing agencies.

Somewhat higher car prices should give the parts makers a better chance to make a reasonable profit on products sold to the vehicle builders for use as original equipment. It is common knowledge that many such units are bought today for cost or less than cost, the parts maker depending on the replacement market to reimburse him for his losses and to return a profit besides. Tires, piston rings, spark plugs, and lately bumpers and other accessories, are being sold on terms which return little if any profit to the company which builds them.

SUCH a condition cannot continue indefinitely. It is not in line with sound economic principles and some day must be changed. Its existence at present is one which is pressing toward higher car prices.

The public gets more for its money today when it buys an automobile than when it buys any other product. At the end of 1923 the purchasing power of the automobile dollar was 111 cents, 1913 values being used as a base. This compared with 51.8 cents for clothing, 61.2 cents for rents, 98 cents for livestock, and 73.5 cents for farm crops. Car makers can raise prices and at the same time give the public good value for its money.

Keen competition and the need for keeping production up and overhead down at any cost are weighing heavily against price increases in certain cases. Whether or not the increases actually go into effect depends upon the force of these factors as opposed to those of growing sales costs.

While signs point toward price increases, reductions in some lines would not be at all surprising. Certain makers may desire to clear up inventories of models which are to be superseded by new lines and may take this means of giving immediate impetus to sales. Reductions of this kind would have little bearing on the general trend.

Political Uncertainty Makes Business Men Impatient

Hesitation in buying laid to lack of definite Congressional action at U.S. Chamber of Commerce meeting. Automotive topics have prominent place in discussions.

By Norman G. Shidle

THE eyes of business are fixed on Washington. Leading members of the U. S. Chamber of Commerce, which met in Cleveland May 6-8, are strongly of the opinion that whatever slowing up in business is taking place at present is due primarily to the political gambols of Congress and lack of definite legislation regarding important economic measures. Uncertainty about taxation particularly is causing hesitation in many lines of trade, while the fact that the fate of the McNary-Haugen bill still hangs in the balance adds increased difficulties in making business plans.

Three representatives of the automotive industry are on the new Board of Directors of the U. S. Chamber of Commerce. Frederick J. Haynes, president, Dodge Bros., was chosen to represent the sixth district; while William J. Dean, Nichols, Dean & Gregg, automotive equipment jobbers, will represent the seventh district. A. J. Brosseau, president, Mack Trucks, Inc., remains as a member of the board, his term of office still having a year to run.

Wide Range of Topics

Besides discussions of general business trends, topics of major interest to automotive manufacturers were threshed out at this meeting. These included:

- Coordination of transport agencies,
- Automobile theft prevention,
- Business ethics,
- Trade associations,
- Reduction of marketing costs,
- Human relations in industry.

The general sentiment of big business as regards Congressional inactivity is expressed clearly by the statement of Julius H. Barnes which met with a large measure of approval from U. S. Chamber of Commerce members. Barnes said.

"The news from Washington is that by a vote of 43 to 40 the matured recommendation of a public servant of great experience and ability as to the wise point in a surtax rate which will produce more national revenue and yet stimulate industry and employment has been discarded by the Senate for a rate manifestly the product of the obstinacy of untested individual opinion or of partisan consideration. This is discouraging but not final.

"The great engine of American industry on which American living standards are maintained the highest

in the world has been slowing up largely because of growing misgiving and distrust as to the ability of our National Congress to appreciate the effect on industry when tax laws destroy the inducement to venture and stifle the individual impulse to try.

"Surely there are fair minded men in both the great parties who will realize this question of the surtax is a vital one to American industry before hesitancy spreads into unemployment and surely there will yet be accord on a reasonable basis of tax revision before it is too late."

Pick Up in Business Anticipated

While there was relatively little public discussion of current conditions at this gathering, representatives of various lines of business agreed that there has been some slowing up in sales. The condition of the automotive industry seems to be favorable, however, as compared with that of business as a whole and there is no indication anywhere that a real slump is to be anticipated. A combination of politics and weather has served to retard sales in many parts of the country and a general belief is gathering that delayed sales are lost sales. It is thought that retail demand may pick up in May and June in automotive as well as other lines, but there is little likelihood that any accumulated demand will have been piled up.

Business seems to be in a period of watchful waiting. Back of the watchfulness, however, there is a spirit of confidence borne of a knowledge that there is no basic economic reason for a large decline in production or distribution. There is no talk of record-breaking production or profits in any line, but a full belief that 1924 will be a profit-producing year.

Dealer Stocks Low in Most Lines

Dealer stocks in most lines of commodities are relatively low. Although buying is not as brisk as it was last spring there is no great surplus of materials on the dealers' shelves. Consequently, production probably will start upward again a few weeks after increased purchasing begins.

There is an old tradition that a presidential election always results in a year of relatively slow business. This year the freaks of Congress are having far more effect on business than is any consideration of change in administration next March.

Leaders of the Chamber of Commerce are explicit

in their opposition to certain measures and in their support of others now before the House and Senate. The stand of the Chamber as an organization is well known as regards the Mellon tax bill, the bonus bill, railway legislation and other similar topics. The chief criticism of Congress from individual members, however, seems to be that no definite action has been taken on many important subjects now up for consideration, Uncertainty—that is the thing that is causing business to hesitate, according to industrial executives. Many of these men would rather see passed a taxation measure with which they do not have full sympathy than be left without definite knowledge of what to expect.

"Let the Farmer Alone," Policy Favored

The farmer is causing just as much debate among the business men as among politicians. The general sentiment at the convention was that special agricultural legislation is likely to do more harm than good. "Let the farmer alone and he will work out his own destiny" was the idea favored by most of the delegates. Considerable opposition to the McNary-Haugen bill was developed. This measure, now before the Senate, provides for a huge Government corporation to buy and export surplus agricultural products; these products to be sold in foreign markets for the benefit of the agricultural producer. An arbitrary index of all commodities is to be set up. On the basis of this index the corporation will buy a particular agricultural product in sufficient quantities to raise its price to the general index for all commodities. The farmers are to receive part payment from the corporation in script, which will be redeemed later at a value based on the price brought for the exported product.

Discussing the situation of the farmer in general and this bill in particular, Dr. W. M. Jardine, president Kansas State Agricultural College, seemed to have the sentiment of a majority of his hearers with him when he said:

"Kansas farmers, and I am sure most other wheat farmers wherever they may be located, are slowly but surely readjusting their agriculture to balance production with demand. They are having a hard pull but they realize it is their only way out. For the past three years they have listened to innumerable proposals from all sources to bring relief, usually through legislative channels, Federal and State, but in the main the only relief that has come to them thus far has come through self-help, through their own efforts, working and readjusting the business of their own farms.

"The farmers are filled up on advice from the outside. They only want to be let alone to work out their own problems. The farmer believes that he has not been getting a square deal and I believe he is right. He has had to pay too much for the things he has had to buy. He is hopeful that it is about over. Personally, I think that inside of two years it will be over and that the farmer will come into his own and that the disparity be-

tween the purchasing power of a bushel of wheat and the articles a farmer will have to buy will be considerably less than it is today. I am not a prophet, nor the son of a prophet, but I predict that inside of two years the farmer will be in a far better position than he is today, providing we stop tampering.

"I do not think that the farmer situation is going to be helped through such legislation as is proposed in the McNary-Haugen measure now before Congress. I am sure the real farmers, the thinking farmers, feel the same way about it. They certainly do in Kansas. They have had enough Government price fixing. They are not asking for charity. They are not for class legislation. They want a square deal. They want our business men and our legislators to make it possible for them to buy the things they need in the operation of their business at a reasonable cost and they will do the rest. The McNary-Haugen measure, in my judgment, is a very un-

sound, unsafe measure to be enacted into law. I believe that the main demand for it is coming from the distressed merchants and bankers and farmers who are attempting to grow wheat under unfavorable conditions.

"The plan embodied in the McNary-Haugen bill is said not to be price fixing, yet it provides that the Government buy the farm surplus until the price reaches certain ratios to an 'all commodity index.' The Government thus determines the ratios and consequently the price.

"The effect of operation of the measure will be to pyramid prices, increasing the cost of manufactures. Thus exports of non-agricultural products would be curtailed, large imports would break over the tariff wall and unemployment would be created. This would reduce

the consumption of agricultural products and we would be lucky if we escaped a general panic. And in such a situation the farmer, as usual, would be worse off than anyone else. The plan would stimulate production, when what agriculture needs is not more production, but less.

Dumping Not a Permanent Cure

"The proposition, under the measure, is to sell a surplus abroad at less than the domestic price. This constitutes dumping, a thing against which we protect ourselves from foreign countries and against which foreign countries would find a way to protect themselves with respect to us. Foreign retaliation might lead to action which would permanently injure our world markets.

"The script system proposed in the bill would mean flat money and the script, hawked back and forth would lose its original value, resulting a loss to the corporation of the fee provided. An army of 50,000 men would be needed by the Government to prevent illegal trading in this script."

The elimination of single commodity farming has already been discouraged by the Government, and variety crops and produce suggested and encouraged. Not a few farmers were discovered to be buying butter, milk, eggs and fresh vegetables.



Frederick J. Haynes, president Dodge Bros., was chosen a member of the Board of Directors of the U. S. Chamber of Commerce, representing the sixth district

Business Must Be Its Own Doctor, Hoover Says

Other speakers confirm idea that sound commercial ethics are needed in industry. Practical standards of conduct outlined.

HERBERT HOOVER summed up the general opinion about business ethics when he said that business should so conduct its activities as to make regulation unnecessary. The day has passed when American business as a whole will approve sharp practices designed to benefit an individual at the expense of the community. Manufacturers in their individual commercial relationships and in their business associations are setting up new standards of action. In adopting a set of fifteen principles of business conduct, the U. S. Chamber of Commerce affirmed several especially pertinent and practical ideas. These were:

The function of business is to provide for the material needs of mankind, and to increase the wealth of the world and the value and happiness of life.

I. THE FOUNDATION of business is confidence, which springs from integrity, fair dealing, efficient service and mutual benefit.

II. THE REWARD of business for service rendered is a fair profit plus a safe reserve, commensurate with risks involved and foresight exercised.

III. EQUITABLE CONSIDERATION is due in business alike to capital, management, employees and the public.

IV. KNOWLEDGE—thorough and specific—and unceasing study of the facts and forces affecting a business enterprise are essential to a lasting individual success and to efficient service to the public.

V. PERMANENCY and continuity of service are basic aims of business, that knowledge gained may be fully utilized, confidence established and efficiency increased.

VI. OBLIGATIONS TO ITSELF AND SOCIETY PROMPT BUSINESS UNCEASINGLY to strive toward continuity of operation, bettering conditions of employment, and increasing the efficiency and opportunities of individual employees.

VII. CONTRACTS and undertakings, written or oral, are to be performed in letter and in spirit. Changed conditions do not justify their cancellation without mutual consent.

VIII. REPRESENTATION of goods and services should be truthfully made and scrupulously fulfilled.

IX. WASTE in any form—of capital, labor, services, materials, or natural resources—is intolerable, and constant effort will be made toward its elimination.

"I am one of those who believe in substratum of inherent honesty, the fine vein of service and kindness in our citizenship. The vast volume of goods and services that daily flow through the land would cease instantly were it not for the instinctive dependence of our people upon the moral responsibility of the men who labor in the shops and farms and the men who direct our production and distribution."

—HERBERT HOOVER.

X. EXCESSES of every nature—inflation of credit, over-expansion, over-buying, over-stimulation of sales, which create artificial conditions and produce crises and depressions, are condemned.

XI. UNFAIR COMPETITION, embracing all acts characterized by bad faith, deception, fraud, or oppression, including commercial bribery, is wasteful, despicable, and a public wrong. Business will rely for its success on the excellence of its own service.

XII. CONTROVERSIES will, where possible, be adjusted by voluntary agreement or impartial arbitration.

XIII. CORPORATE FORMS do not absolve from or alter the moral obligations of individuals. Responsibilities will be as courageously and conscientiously discharged by those acting in representative capacities as when acting for themselves.

XIV. LAWFUL COOPERATION among business men and in useful business organizations in support of these principles of business conduct is commended.

XV. BUSINESS should render restrictive legislation unnecessary through so conducting itself as to deserve and inspire public confidence.

The basic thoughts expressed in these standards and in Mr. Hoover's address were echoed by various speakers throughout the meeting, indicating a widespread acceptance of the principles outlined. Judge Edwin B. Parker, umpire Mixed Claims Commission, brought out a very practical phase of the matter when he said:

"No business enterprise can be safely conducted, in its own or the public interest, on guesses or inaccurate information. Knowledge is essential. It will fall short in the duty which it owes to itself and to the public if it does not constantly improve the service it renders in quantity, quality, and in costs. While it should be prepared to take advantage of every opportunity to reduce the costs of its service without sacrifice to those interested in the industry, it must on the other hand have such accurate knowledge of its costs that it can know whether or not it is receiving a proper return for its service."

Collecting Information Is an Obligation

"Operation at less than cost, if persisted in, not only means ultimate failure, with loss to investors and employees, but the public suffers through being deprived of a service and through the demoralization resulting from an operation economically unsound. An obligation, therefore, rests upon every business enterprise diligently to procure in every legitimate way accurate information of all facts and conditions affecting the business, to the end that increased knowledge may bring increased gains and increased service to the public."

The function of the trade association was discussed by several speakers, including Mr. Hoover, all of whom expressed a strong desire for some definite ruling from the Department of Justice which would enable the various trade associations to know just where they stand. So far as could be determined there is no more definite understanding on this subject than there was a year ago.

Mr. Hoover, reiterating the idea he has expressed for some time past, said that "these associational activities are the promising machinery for much of the necessary determination of ethical standards, for the elimination of useless waste and hardship from the burden of our economic engines. Moreover, we have in them not only the agencies by which standards can be set, but by cooperative action among the associations representing the different stages of production, distribution and use we can secure a degree of enforcement far wider than mere public opinion in a single trade."

Lew Hahn, managing director, National Retail Dry Goods Association, has received the impression that "the actual state of the law or even judicial decisions based on the law seem to be of less importance than the question

as to who administers the law—who decides upon what suits are to be brought and how these suits are to be presented."

Many of the difficulties of the present situation were pointed out by Col. George T. Buckingham, Defrees, Buckingham & Eaton, attorneys. Colonel Buckingham said in part:

"Numerous and important as these bodies are, nobody at this moment can with authority even define the term 'trade association.' No two of them are identical in purposes or in activities, so that the problem presented is not a single problem but in reality a hundred problems.

"If any principle can be found which is common to all of these activities, it is probably best expressed thus: that in any group engaged in the production of a common product it is desirable that all the facts about that industry known to anyone should be known to all, for the common benefit of all.

"Those trade associations which restrict their activities to matters of common interest which relate solely to production have not aroused any particular interest in the apathetic public and have not, to any appreciable extent, become the subject of controversy.

"But most of the associations have not restricted their activities to the production side of the business. On the contrary, those which have been most active and most in the public eye have dealt with the distribution side of the business.

"The object—and the sole object—of the business man or the business entity, who produces goods, is to sell them—and sell them at a profit.

"Hence the marketing and sales of products is by all odds the most important part of any business.

"It is a fallacy to believe that any considerable number of producers, can long operate at a loss, without that loss being finally shouldered by the entire body of citizens. Losses, like taxation, can be artificially placed on a class or a group, in the first instance. But they don't "stay put." They finally gravitate, until they reach the whole consuming public.

It becomes, therefore, of the greatest importance, first to the producer and second to the consumers, that there should always be maintained, in the aggregate, some sort of approximate balance between production and consumption. That result can be accomplished only by the producers, separated and isolated as they are, being kept constantly in possession of what may be termed the statistics of production and consumption.

Trade Information of Vital Importance

"Brought about by these obvious and logical considerations, the average trade association, therefore, has for its major activity, the collection and distribution of trade information, in the form of statistics.

"These statistics are, of course, varied and different in different industries, but they relate usually to productive capacity, quantities produced, quantities shipped, stocks remaining on hand. This information usually is reported to the association by the individual members, on blanks provided for that purpose, at intervals, and for periods, daily, weekly, monthly, or quarterly, as the case may be.

"When this scattered and isolated information is thus assembled, it is tabulated by the association, also on blank forms, and reported back to the individual producers. Each of them is then in position to know the state of production, shipments, consumption, stocks on hand, and generally the state of the market.

"The inevitable tendency of this diffused information is to reduce the curves of over-production and underproduc-

tion, and to stabilize the entire market situation in that industry.

"I have been discussing statistics. Statistics are the statement of past and accomplished transactions. They are a record of industrial history. They are the beach marks of yesterday's flood. The information collected, disseminated and published by a proper trade association is of that historical character. Whether it relates solely to quantities shipped, produced and on hand, or whether it also relates to sales prices, it describes the *past*, and not the *future*.

Compares Trade Statistics to News

"It seems to me that all the people who produce, for illustration, iron, have a right to know, and by mutual and concerted action, through a trade association, to ascertain and publish, how much iron was produced yesterday in the United States, or in any region, how much iron stock was on hand, how much iron was sold and shipped, and what prices iron was sold for, and where.

"There is no reason in ethics or morals, and should be none in law, why any iron producer should not join in an effort, through a trade association, to make public the exact statistical facts about the operations of his industry, and to predicate on those facts such individual action as his own judgment dictates."

"There is no reason in ethics or morals, and should be none in law, why any iron producer should not join in an effort, through a trade association, to make public the exact statistical facts about the operations of his industry, and to predicate on those facts such individual action as his own judgment dictates.

"It seems to me that such an association of iron producers, differs in no wise in principle from the Board of Trade, which records yesterday's sales of wheat and corn, the estimated acreage, the state of the crops, and all other information which will naturally affect the price of, and the market for, grain.

"It seems to me that it differs in no respect from the Stock Exchange, which records yesterday's sales prices of listed securities.

"I believe that this view is held by the Department of Commerce of the United States Government and by most economists who have studied this question. I hope that it will ultimately be held by the Supreme Court of the United States.

"But I am forced to record the fact that no less an authority than those who are assistants to the Attorney General of the United States and in charge of so-called "anti-trust" prosecutions for the United States Government, at this time, do not hold this view.

Economics Are Like Laws of Gravity

"It is my belief, however, that this view held by these particular gentlemen is an ephemeral and passing incident in the development of a great subject.

"The laws of economics are as immutable as the laws of gravitation. No man-made and artificial barriers can ever stand permanently against them. In the end the economic laws will prevail, because they are inevitable and for the best interests of the whole community.

"I therefore confidently believe that the proper Trade Association of the present era is here to stay; that those

illegal and improper activities which in some instances have been connected with it, or have grown up beside it, will be weeded out, and will gradually disappear; that the proper outlines and limits of these Trade Association activities will ultimately become firmly fixed and standardized in business and in law; and that in the end the thing we call the "Trade Association" will become a powerful instrument for good, in the business life of the nation."

The idea that statistical work by trade associations can be and is being carried on for a thoroughly constructive purpose was borne out in the dinner meeting of the American Trade Association Executives held during the U. S. Chamber of Commerce convention. This organization, of which Alfred Reeves is the president, discussed statistics in a series of five minute talks. Seven speakers, representing different lines of industry, showed the type of information being collected and the value of such information to industry.

Backing up these constructive ideas is the resolution adopted by the U. S. Chamber of Commerce as a whole which reads:

"The Chamber of Commerce of the United States by referendum No. 41 approved the functions of trade associations in proper dissemination of statistics of industry as in the interest both of business and of the public and not constituting a restraint of trade. The Chamber urges upon the government departments concerned that all possible steps be taken to secure action eliminating the obstacles or uncertainties which interfere with the

most effective carrying out of this trade association function."

Mr. Hoover, discussing business ethics as related to trade associations, said in part:

A whole host of rules and regulations are necessary to maintain human rights with this amazing transformation into an industrial era.

The question we need to consider is whether these rules and regulations are to be developed solely by government or whether they cannot be in some large part developed out of voluntary forces in the nation. In other words, can the abuses which give rise to government in business be eliminated by the systematic and voluntary action of commerce and industry itself?

The test of our whole economic and social system is its capacity to cure its own abuses. New abuses and new relationships to the public interest will occur as long as we continue to progress. If we are to be wholly dependent upon Government to cure these abuses we shall by this very method have created an enlarged and deadening abuse through the extension of bureaucracy and the clumsy and incapable handling of delicate economic forces.

The Government can best contribute through stimulation of and cooperation with voluntary forces in our national life; for we thus preserve the foundations upon which we have progressed so far—the initiative of our people. With vision and devotion these voluntary forces can accomplish more for America than any spread of the hand of Government.

Progress Made in Coordinating Transportation

Views of automotive executives incorporated in recommendations approved in U. S. Chamber of Commerce by overwhelming majority.

GEORGE M. GRAHAM, vice-president Chandler Motor Car Co., the chief automotive speaker at the convention, gave the assembled business men a clear picture of automotive development in recent years and of the constructive part to be played by the car and truck in the future growth of coordinated transportation. Mr. Graham, who also is chairman of the N. A. C. C. committee on traffic and accidents, said that strenuous methods should be used to curb the reckless driver and urged that work be carried on vigorously to educate pedestrians and school children, as well as car and truck owners, regarding safety problems.

Following Mr. Graham's talk, a large part of which is printed on following pages, the transportation group meeting adopted the recommendations of the U. S. Chamber of Commerce committee on coordination of transport agencies. Perhaps the most important recommendation is that in which it goes on record as favoring the expenditure of special motor vehicle taxes only for the maintenance of improved highways.

This policy has been advocated by the automotive industry for many years and its approval by this large body of commercial interests should be of very real assistance in having it accepted in highway practice by the various States.

Further impetus to development of motor transport was given by the passage of a resolution urging special Government aid in completing transcontinental highways through certain semi-desert States unable to finance their own share of such construction. It is recommended "that Congress consider an amendment to the present Federal

aid laws which will permit the completion of these highways at an early date."

Results of the U. S. Chamber of Commerce referendum on the report of the special committee on transportation showed an overwhelming majority in favor of every one of the fourteen proposals. The vote on the four proposals of special importance to automotive interests was as follows:

The committee recommends that the national transportation policy should aim at development and maintenance of an adequate system of rail, water and highway transportation with full cooperative service of all agencies that will contribute to economy and efficiency.

In favor 1879 1/2
Opposed 89 1/2

The committee recommends that optional store-door collection and delivery with reasonable and separately itemized trucking charges in the published tariffs be established as rapidly as practicable by agreement between carriers and shippers, beginning at the centers of greatest congestion.

In favor 1454
Opposed 478

The committee recommends that the rates and services of motor common carriers, both freight and passenger, should be subject to regulation by the state and federal commissioners which have jurisdiction over the operation of other common carriers having particularly in view insuring to the public adequate, economical and continuous service.

In favor 1765 1/2
Opposed 200 1/2

The committee recommends that in addition to bearing an equitable share of the general tax burden, the road users should pay the entire cost of maintenance of improved high-

ways through special taxes levied against them, such special taxes being applied exclusively to that purpose.

In favor1283½
Opposed 436½

The large vote in favor of these recommendations bears tribute to the practical success of the transportation conferences held during recent months. There can be no doubt but that a new spirit of cooperation has been developed as a result of these meetings and that a sound basis has been laid for future action along these lines.

Carl R. Gray, president of the Union Pacific System, for example, said in opening the transportation session that originally he had been very skeptical of the usefulness of any conference involving representatives of the various types of transportation. He had accepted with hesitancy the invitation to sit in on the original conference some months ago. The developments which have been made since that time, however, have convinced him that there is a very practical purpose to be served through coordinated effort.

How to Take Away Market for Stolen Cars

Certificate of title laws urged as means to make automobile thieving less attractive. Automotive industry supports plan.

THE insurance group of the U. S. Chamber of Commerce adopted a report recommending that bills be passed in each State requiring a certificate of title to go with every automobile when sold. Twelve States already have such laws in force and reports from all of them indicate that thefts have been reduced materially as a result of the legislation.

The U. S. Chamber of Commerce as a whole adopted a resolution on the last day of the meeting urging that "all States adopt the principle of certification and registration of automobiles as one of the most important and effective means for reducing thefts." The resolution suggests that "this legislation should be uniform and should contain adequate provision for enforcement, with proper penalties for violation."

Industry Approves Plans

The automotive industry is heartily behind this proposal, according to Alfred Reeves, general manager of the N. A. C. C. Speaking in the insurance group meeting, Mr. Reeves stated that the automobile manufacturers would be glad to have the insurance companies call on them for assistance in urging such laws on the various State legislatures. He pointed out that the Michigan law, which has been in force for some time, has worked out very successfully and that it should serve as an excellent model for future legislation. He said that there is still some question as to where the certificate of title should originate: whether it should go with the car from the manufacturer to the dealer, whether it should originate with the dealer when he sells the car to the user, or whether it should be required only when the owner registers the car for use.

The certificate of title is valuable chiefly because it tends to take away from the crook the market for stolen cars, said Frank Robertson, National Board of Fire Underwriters. Mr. Robertson listed the States having such laws as follows:

Michigan	Alabama	California	Delaware
Maryland	Wyoming	Pennsylvania	Florida
Missouri	South Carolina	North Carolina	
Indiana	Virginia	Utah	

Congress is considering a certificate of title law for the District of Columbia, Mr. Robertson said. Quoting the experience of various States with these laws, he showed that they have operated to cut down automobile thefts in every case. The Michigan law is believed to have reduced thefts by 50 per cent, while the same reduction is reported from Indiana. Other States report material benefits.

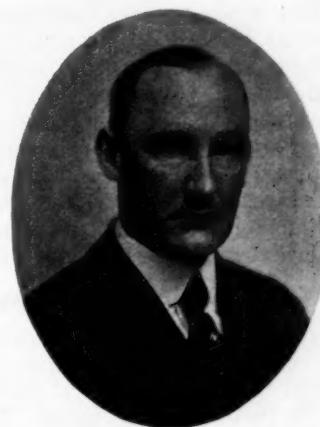
Among those directly benefited by the enactment of a certificate of title law, Mr. Robertson said, are:

1. Owners of insured automobiles who are interested because of insurance rate reduction.
2. Owners of uninsured automobiles who have a lessened liability of theft.
3. Finance and credit corporations who deal in automobile commercial paper.
4. Motor dealers who have an unpaid lien.
5. District Attorneys and law enforcement officers.
6. Insurance companies, which will have a much more stable business as well as a larger volume even with lower rates.
7. The increased revenue to the State from fees by reason of the check on proper license plates that result from the certificate of title law.

Regarding the effect of these laws on insurance rates, Mr. Robertson said:

"Since the enactment of the certificate of title law in Michigan the country theft rate has been applied throughout the State of Michigan outside of the city of Detroit.

George M. Graham, vice-president Chandler Motor Car Co., told the U. S. Chamber of Commerce delegates about the important part being played by the motor vehicle in modern transportation



In Wyoming, where the law was enacted in 1923, the theft rates have been reduced 50 per cent. In North Carolina, Florida and Alabama, where the law became effective in 1923, a reduction of 10 per cent has already been granted. Similar reductions will obtain in Virginia and South Carolina on the dates their laws go into effect.

"It is interesting to compare the Michigan theft rates with those obtaining in New York. In the case of Michigan, which has a certificate of title law, \$500 theft insurance on a Ford car costs \$4 (outside of the city of

Detroit), and no locking device is required. In Albany, N. Y., \$500 theft insurance on a Ford car is \$34.35 and a locking device is required. In the State of Michigan (outside of the city of Detroit) \$1,000 theft insurance on a Buick costs \$7, whereas the same amount of insurance on a Buick in Albany, N. Y., costs \$40. To be sure, the peculiar nature of the theft situation in New York always would require some difference from the Michigan rate, but

the conclusion is inescapable that the certificate of title law does materially reduce thefts.

"One of the substantial benefits of the certificate of title law is the recovery of stolen cars. Reliable estimates are that less than 30 per cent of insured stolen cars are recovered under present conditions. In Maryland the percentage recovered in 1923 was 94 per cent and in Michigan the percentage of recovery is more than 96 per cent."

Human Relations—a Basic Production Problem

A square deal, including voice in the conditions under which he is to work, is just demand of modern employee, A. H. Young says

DESPITE major strides in solution of mechanical production problems, the human side of industrial relations still requires a vast amount of study. Questions involved in the reaction of individuals in industry to their environment and to their work are many in number and complex in character. These facts were the basis for discussion of human relations in industry by the fabricated production group.

Arthur H. Young, manager industrial relations, International Harvester Co., talking on "The Obligations of Employers in Successful Production" presented one of the soundest and most striking analyses heard in some time. Referring only incidentally to the well-known International Harvester works council plan, Mr. Young stated briefly and clearly the fundamentals of the industrial relations problem. His own words summarize the matter as concisely as could any digest. He said in part:

"We get from employee representation a living, humanized, vitalized and continuous contact. We get an understanding of the conditions we must meet, and the problems we must solve that is entirely mutual; we get a far better understanding by each side of what's on the other side's mind.

"After a while, when somebody writes or re-writes our industrial history, he cannot fail to note the remarkable transition which began to make itself rather generally felt about five years ago.

"Before that time, it is true, a number of earnest thinkers and students in our country had been pioneering the way to a better and sounder concept and practice of industrial relations, and a few conspicuous employers had experimented in various ways and with varying success with practical demonstrations of these ideas.

Progressive Ideas Spreading

"But you will doubtless recall that five years ago you could count on your ten fingers the employers who had accepted the new industrial doctrine and had put it into effect in their establishments. Now that doctrine has become an every-day fact of American industry. Now it is the industrial law of hundreds of big and little industries, regulating the relations of hundreds of thousands of workers with their employers.

"Years ago, when I worked with my hands in a steel mill, I began to think that the average American working man does not want anybody's charity, and least of all his employer's, but what he does want is an even break on his job; that a 50-50 relation with his employer is as important to him as wages, and may be more important. Now I know that this is true. Given and assured of in-

dustrial justice there is nothing more needed to produce industrial harmony in its highest sense.

"There is nothing less or nothing else that will do just as well. There is no substitute for justice. You cannot put wages enough into a pay envelope to make a happy, contented and successful worker out of a man who feels that he is being imposed upon, that he is being denied his rights, that somebody else is getting more pay for less work or less valuable work, or is getting privileges and opportunities of any kind that are denied to him.

"Neither can you strain the quality of the industrial justice as expressed in employee representation and hope to have it pass for what it is not. Probably one of the principal reasons for the failure of many early and some more recent plans of employee representation has been their effort to camouflage, to disguise and to avoid—to make the employees think they were participating by their representatives in shaping the industrial policies and determining the industrial conditions under which they were to live and work, when in fact these representatives were, in truth, mere spectators and not participants.

"There is something more on the employer's side in this whole idea of a better and happier industrial relation than successful production, than even the safeguarding of our form of government, with all its cherished institutions. There is, I believe, something in it beyond and above any mere material consideration, however great or necessary that may be. Power and strength bring opportunity, and opportunity brings an added obligation that neither seeks nor expects any reward—the obligation of altruistic purpose and an altruistic endeavor."

Fairness Essential

James E. Kavanaugh, second vice-president, Metropolitan Life Insurance Co., summed up the benefits and limitations of pension systems for industrial workers as follows:

1. Pensions are not costly.
2. Whether you have a Pension Plan or not, begin setting up a reserve now.
3. Whether you have a Pension Plan or not, carefully consider allowing your employees to contribute.
4. Beware of calculations based on published Annuity rates.
5. Place no dependence whatever on calculations of probable withdrawal from service.
6. Avoid Pension Plans based on final salary.
7. If you have a Pension Plan find out through expert actuarial advice how it stands financially. If you have not a Pension Plan, find out through expert actuarial advice the probable future cost before you start one.

Discussing these points, he said:

"Pension practice in this country is still in its early stages. At the beginning pension plans were set up with little regard for future cost. In the main, like Topsy, 'they just grewed.' The second stage, in the midst of which we now find ourselves, is an incalculable advance; because today pension plans are not being adopted without consideration of cost and in many cases without actuarial examination and report. But even actuarial advice is based to some extent on theory.

"If you could know in advance just which of your employees and just how many out of a thousand were going to stay with you until the pension age, it would not be necessary to set up any reserve as to the rest. Tables have been constructed by actuaries to show in any industry how many employees might be expected to leave the service before the pension age.

"Tables having to do with the voluntary action of a given body of employees are in no sense to be depended upon in the same sense that tables dealing with involuntary experience, such as death, may be depended upon. It is extremely risky business, therefore, to base pension fund calculations upon probable length of employment. Always unreliable, employment curves founded upon the unusual conditions of the past ten or fifteen years, are even more erratic than they might otherwise be. You can be safe only if you count upon separations from the service *after they occur*, and do not depend upon them in your calculations.

"Another dangerous fallacy is the effort to set up a reserve based upon the percentage of the final salary or the final few years of salary. It is just as impossible to predict now the salary of an individual thirty years hence as it was to predict in 1894 the wages of 1924. It is impossible accurately to set up a known reserve against an unknown liability. If your future pension is to be based on length of service and salary, let the percentage be a percentage over the whole period of service, so that each year as the salary changes the reserve may automatically change with it, and that you may be certain when the time for pension payment arrives that the fund will be sufficient."

Cutting Sales Cost

The automotive industry is not the only one faced with an immediate necessity for cutting marketing costs. This is evidenced by the fact that department stores, farmers, and others are intensely interested in finding practical ways of lowering the cost of distribution. There is a general feeling, particularly among automobile men, that major production problems already have been pretty well licked but that the fight on merchandising costs has only begun.

Cooperative buying of one kind or another was the chief means of cutting costs discussed at the Chamber of Commerce meeting.

The organization of chain department stores to reduce the costs of distribution and meet the growing competition of the ordinary chain stores was advocated by Edward A. Filene, President of the William Filene Sons Company of Boston, in an address at the group meeting considering the problem of domestic distribution.

"Competition in production," said Mr. Filene "has developed to such a degree that the producers are being forced to pay increasing attention to the cost of distribution, for producers realize more definitely now that the most successful producer will hereafter be the one whose goods reach the consumer at the lowest retail price, quality considered. The average commodity now doubles in price between producing cost and retail selling price to the ultimate consumer, and in some cases, including

some farm products, even trebles. This condition, contentedly tolerated for many years, became the next point of attack. It then became better understood that, just as in the case of production, efficiency in distribution lies in the direction of mass operation—mass selling."

Cooperative Marketing Urged

Cooperative effort was offered also as one means of helping to solve the farmers' problems.

"The farmer cannot solve his marketing problems by individual effort, neither is cooperative marketing a panacea for all the farmer's economic difficulties," declared Lloyd S. Tenny, Assistant Chief of the Bureau of Agricultural Economics, United States Department of Agriculture.

Discussing cooperative marketing, Mr. Tenny pointed out that the farmer is essentially a manufacturer and is confronted with the same marketing problems as the manufacturer of any other product.

"The farmer has the same right to control and solve these economic questions as have other business men," Mr. Tenny said. "Individual effort cannot solve them and group action is involved! It is not only necessary that the right of the farmer to organize be accepted morally, but that this right be recognized by law."

F. M. Feiker, vice-president, Society for Electrical Development, emphasized the need for a marketing census, similar to the census of manufacturing. "At present," he said, "we have a lopsided picture of our business of marketing and selling."

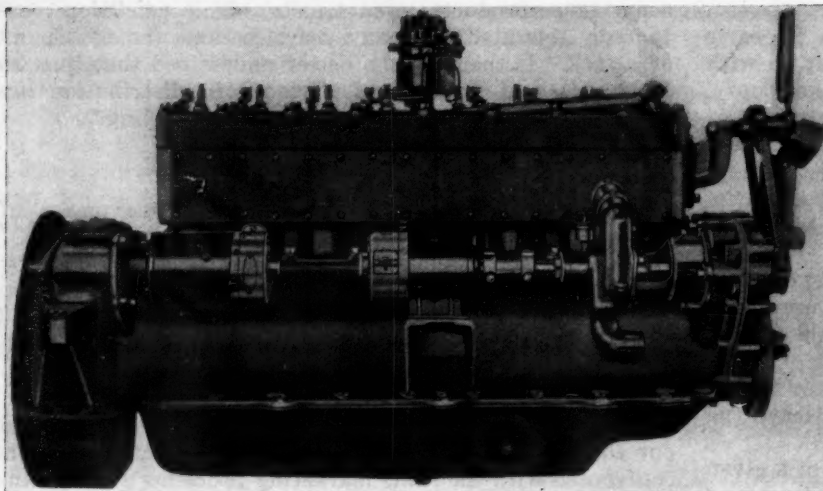
"Most discussion of costs of distribution at the present time," Mr. Feiker went on, "is emotional. The man who shouts loudest is heard farthest. If you are a manufacturer you guess at the number of jobbing and retail outlets and the total volume of sales. There is no basis of

A. J. Brosseau,
president Mack
Trucks, Inc.,
another automo-
tive representa-
tive on Board of
Directors of the
U. S. Chamber
of Commerce. His
term of office still
has a year to run

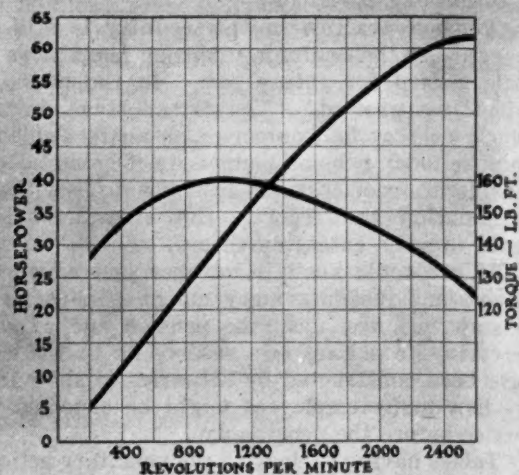


comparing your totals against the general totals. You have no intelligent measure of marketing possibilities. If you are a jobber you have no way of knowing the number and amount of business handled by different classes of retailers. If you are the public, the consumer, you have no basis of judgment as to the facts.

The automotive industry was well represented at this U. S. Chamber of Commerce meeting. A. J. Brosseau, president, Mack Trucks, Inc.; Windsor T. White, chairman of the board, White Motor Co.; D. A. Burke, president, Peerless Motor Car Co.; F. C. Chandler, president, Chandler Motor Car Co.; George M. Graham, vice-president, Chandler Motor Car Co.; G. Brewer Griffen, president, M. & A. M. A.; Alfred Reeves, general manager, N. A. C. C.; T. A. Willard, president, Willard Storage Battery Co. and M. L. Heminway, general manager, M. & A. M. A. were among the automotive executives present.



Lycoming 8-in-line engine, off side



Torque and horsepower curves

8-in-Line Engine Is Latest Product of Lycoming

Cylinders are cast in a single block and are of L-head type. Dimensions will be varied for particular cars, but on first models built bore is $3\frac{1}{8}$ in. and stroke $4\frac{1}{4}$ in. Pistons are of cast iron. Inlet and exhaust manifolds are combined.

THE new 8-in-line engine brought out by the Lycoming Motors Corp. of Williamsport, Pa., is of clean design, flat surfaces predominating. The cylinder dimensions of the first engines built are $3\frac{1}{8}$ -in. bore by $4\frac{1}{4}$ -in. stroke (260.7 cu. in.). This engine peaks at 2600 r.p.m., at which speed it develops 62 hp. on the brake. Other sizes are now being built to suit particular cars.

L-head type cylinders are used, and all of them are cast in a single block. A compression ratio of $4\frac{1}{2}$ is provided for. On the side opposite the valves the water jacket is cast open, and this opening is closed by a pressed steel cover. The water inlet to the jacket is in this cover near its forward end, and to the inside of the cover is welded a steel water distributor which extends the length of the jacket and has an outlet hole opposite each space between adjacent cylinders, the outlet holes being graduated in size from front to rear so as to insure substantially uniform circulation of the cooling water through all parts of the jacket. The water from the distributor pipe passes between adjacent cylinders directly to the valve pockets, which require the most intense cooling.

Cylinder head and crankcase are separate iron castings, the various units being assembled by means of numerous studs and nuts. A water outlet connection is cast integral with the cylinder head at its forward end and pry lugs are cast on the head on the valve side, which afford an opportunity of making use of prying tools when the cylinder head has to be removed.

The crankcase, which extends $2\frac{9}{16}$ in. below the crankshaft axis, has the bell housing and chain housing cast integral with it. Five main bearings support the

crankshaft, so there are two crankshaft throws between any pair of adjacent bearings. These bearings are supported by partitions in the crankcase. There are stiffening ribs also between those cylinders where there is no bearing, and this, together with the fact that the case is carried a considerable distance below the axis, gives a very rigid crankcase construction.

The pistons are cast iron of a special light weight design. Three piston rings are carried, all above the piston pin, and directly below the lowest ring groove is cut an oil groove, with oil return holes through the piston wall. The piston pins are clamped in the connecting rod and have their bearings directly in the piston bosses.

Oil Holes and Grooves

The crankshaft is of such design as to give uniform spacing of explosions together with complete elimination of primary and secondary unbalanced forces and rocking couples. The firing order used is as follows: 1-6-2-5-8-3-7-4. All main bearings are $2\frac{3}{8}$ in. in diameter and the crankpin bearings $2\frac{1}{8}$ in. The two end bearings are $2\frac{3}{4}$ in. in length; the center bearing is 2 in. and the two intermediate bearings are $1\frac{3}{4}$ in. There are no oil grooves in the crankpin bearings, while the main bearings have short circumferential grooves extending to each side of the oil inlet. Holes are drilled through the crank arms from the main to the crankpin bearings for the lubrication of the latter.

For the camshaft and accessories drive use is made of the Link Belt silent chain system, with a spring supported idler pulley to maintain the necessary tension.

The chain, which is of $\frac{3}{8}$ -in. pitch and $1\frac{1}{2}$ -in. width, passes over wheels on the crankshaft, camshaft and accessories drive shaft. A cast iron cover plate is provided for the chain housing.

The valves are of $1\frac{5}{16}$ in. clear diameter and have a $\frac{5}{16}$ -in. lift. Exhaust valves are Silchrome. Intake valves are chrome nickel steel. They are operated from the camshaft in the crankcase through mushroom type cam followers with the usual set screw and lock nut adjustment. The pressed steel plates cover the compartment containing the valve springs and adjustments, which compartment communicates with the crankcase through a number of drill holes, so that it receives a constant supply of lubricant. The tappets are provided with individual guides.

There are six bearings on the camshaft and they are so arranged that this part can be removed from the front of the engine. At the center of the camshaft there is a drive by helical gears to the ignition unit on top of the engine and to the oil pump in the crankcase. The oil pump is of the gear type and draws oil through a large strainer below it which can be removed through an opening in the pressed steel crankcase bottom. A pressure regulating valve accessible from underneath is mounted on the delivery side of the pump.

Copper Leads to All Main Bearings

From the pump copper leads of liberal size extend to all of the main bearings. In the front main bearing there is a special groove which connects with an oil hole to the chain idler pulley bearings. There are a number of holes in the idler bearing which register with the oil hole, so that the chain gets four or five shots of oil during every revolution. Oil is taken into the pump from the bottom of the oil sump, where the supply is coolest.

The engine is designed for pump circulation of the

cooling water and is furnished with a centrifugal pump. The cover of the latter is developed in the form of a supporting bracket which is recessed into the chain housing from the rear. An inlet ell is cast integral with the pump housing.

S. A. E. Specifications Used

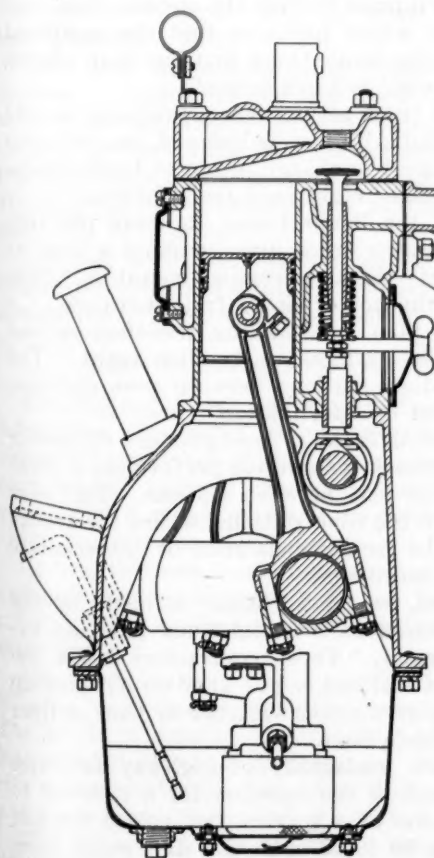
At about the center of the engine a bracket is cast on the crankcase on which an S. A. E. standard base mounting generator can be fitted. The drive for it is taken from the pump through a flexible coupling. Provision for an S. A. E. No. 1 starter with outboard bearing is made on the bell housing.

The fan bracket is slotted and is slipped over two studs screwed into the forward end of the cylinder block. It is to be driven through a $\frac{5}{8}$ -in. V belt from a pulley on a forward extension of the accessories drive shaft, and the belt tension can be adjusted by means of a set screw in the top of the bracket and abutting against the upper one of the supporting studs.

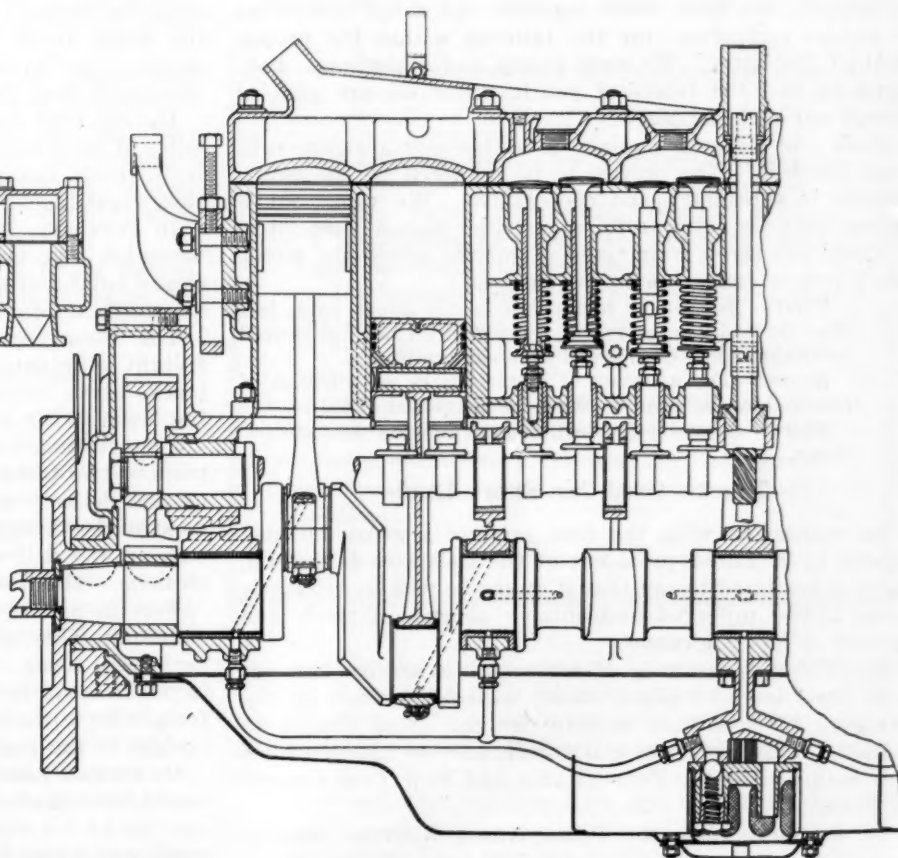
The intake manifold is of the Swan type. Exhaust gas analysis tests were used in working out the intake manifold design to give uniform distribution of gas to all cylinders. The intake manifold is arranged above the exhaust manifold to provide for heating the lower side of the intake passage. A hot spot is provided in the center where the intake and exhaust manifolds are bolted together. A $1\frac{1}{4}$ -in. vertical carbureter is used.

Regulation Three-Point Support

The engine is designed for three-point support, one of the supporting points being on the cover of the chain housing and the other on arms extending from the bell housing, these latter being designed in accordance with the S. A. E. standard for engines supporting arms, taking a single bolt.



Cross section through Lycoming engine



Longitudinal section through Lycoming engine

Transportation Efficiency in Future Depends on Motor Vehicle

Plays a more important part each year in supplementing other forms of transport. Industry taking active part in solving vexing traffic and safety problems.

By George M. Graham*

Vice-President, Chandler Motor Car Co.

THE vital thing that happened to the automotive industry in 1923 was its improved relationship to its older and bigger brothers in transportation—the steam and electric railroads.

For the gain in this direction, the public is largely indebted to the United States Chamber of Commerce. It was at the instance of its president, Mr. Barnes, that a conference of railway, automobile and waterways officials was called in New York. From it resulted the first great national analysis of transportation problems. Competition is giving way to cooperation.

The public will be the greatest gainer through this new understanding of transportation, since the necessity of moving persons and products speedily and at low cost is deeply involved with the cost of living. We can now forecast the eventual elimination of the motor vehicle as a competitor of the railroads.

Actually, we have never regarded the motor vehicle as a serious competitor for the railroad within the proper field of the latter. We were young and ambitious. Perhaps we had the faults of youth. Now we are glad to accept our rightful place.

Bulk and distance haulage is exclusively a steam railroad function. The service to be rendered by the motor vehicle is subsidiary and cooperative. We would much rather have the railroad for a customer than a competitor.

There are three main types of service which the motor truck is now rendering to the railroad:

First—The use of motor trucks for short haul, less than carload lots, a type of service which has not proved profitable when discharged by steam railroads.

Second—The adoption of motor trucks as a means of establishing terminals outside of congested districts.

Third—Store-door collection and delivery in terminal areas.

Trucks Used for Short Hauls

In connection with the first service, a great railroad expert, L. F. Loree, president of the Delaware & Hudson, has not hesitated to say that it might be well to dismantle some 25,000 miles of unprofitable short-haul track and convert it into highways.

In 1922 not one mile of motor truck service had yet been installed to replace steam railroad service in the handling of less than carload freight from station to station. This gives especial significance to the activities now launched by the Pennsylvania and New York Central railroads.

In January, 1923, the Pennsylvania Railroad inaugu-

rated motor truck service to replace one of its local package freight trains. This pioneer experiment was made from Cambridge to Salisbury in Maryland. A study of transportation facilities in and near Baltimore developed the fact that fully 98 per cent of all the railroad stations and steamboat landings on the eastern shore of Maryland were also reached by the State road system, which system largely paralleled rail lines and the river. A plan was devised whereby practically all of the less-than-carload merchandise freight formerly handled by the water and freight lines of a competing truck company was consolidated at Cambridge, Md., at which point it is immediately loaded into motor trucks and forwarded to destination over the State roads.

Combined Service Profitable

From month to month there is reported a constantly increasing business performed by both the steamer lines and the motor truck line, which indicates that the combined service is so far superior to anything that has been offered previously that the public is quick to profit.

During 1923 motor truck service was established on 204 miles of the Pennsylvania Railroad's line and, according to R. S. Hurd, special agent in charge of motor truck operation, eight trucks replaced eight local freight lines.

In February, 1924, the Pennsylvania Railroad put into operation four more motor truck units, making a total of eleven units and twenty trucks in regular operation. This has meant a total elimination of eleven freight trains.

The Pennsylvania plan in handling less-than-carload freight eliminates the package or peddler train. The trucks serve intermediate stations between zone stations, the latter being served by "destination" cars.

Zone stations are established as headquarters for motor trucks—two trucks at each installation performing a pick-up and delivery service only between stations. Full cars go straight through to the zone stations, where the trucks pick up and deliver the freight consigned to intermediate stations. This saves much time.

For the trucks used, no capital outlay is made by the railroad. They are hired on a rental basis from an experienced truck operator. These contractors work between railroad freight stations only. They do not pick up freight from the consignor's doorway, nor do they deliver freight to the consignor's door.

In former years the inadequacy of highway facilities would have made it out of the question for a railroad to use trucks for this kind of a service, but now a five-ton truck can travel from 50 to 60 miles per day, make from 20 to 30 stops and handle from 10 to 15 tons of freight.

Mr. Hurd says that studies are in progress for further

*Excerpts from address before U. S. Chamber of Commerce convention.

installation of trucks and that the present Pennsylvania mileage of track operation will soon be increased to 1000 miles.

It is not alone by the use of trucks over the highways that railroads are now impressing into service the internal combustion motor. There is a steady tendency toward the use of gasoline motor cars operating on rails.

While only 40 railroads were listed last year as using such a service, a recent compilation by the American Short Line Railway Association shows that now 170 motor cars are in use on 111 lines, of which 21 are trunk and the remainder short lines. These records show the approximate mileage now so covered to be 7041, and 170 steam trains have been replaced.

According to the association, the actual investment in serviceable motor cars, on rails, is probably not in excess of \$2,500,000. The steam train investment necessary to provide the same service would probably approximate \$8,000,000 to \$10,000,000.

What may be called the relation of a motor truck to terminal railroad problems is a phase of the subject which is now receiving the closest attention of two foremost Pennsylvania Railroad officials—Elisha Lee, vice-president, and Robert C. Wright, general traffic manager.

As a result of their leadership the Pennsylvania Railroad is working to the point when it will as nearly as possible relieve its railroad cars from the shipment of freight from one station to another, whether these stations be all Pennsylvania Railroad or the stations of other railway companies.

Perhaps the best example of the use of trucks in railroad terminal work is furnished in Cincinnati. Under the old trap-car system it required an average of 72 hours to move l.c.l. freight from one railroad terminal to another. Motor trucks now do the same work in 20 minutes.

Instead of building a union freight terminal at a cost of \$20,000,000, about \$150,000 was invested in equipment and motors, with the result of better service to shippers and railroads.

Store-door delivery is being studied by all progressive railroads. Better service and lower cost will be achieved as soon as such a system can be brought to function. The bulk of inbound traffic would be immediately dispatched by truck, thereby avoiding delays under the present system of notifying the consignee and holding goods until called for.

The rail haul could begin or end at an outlying station readily accessible to highway vehicles. This would be the elimination of much of the present congestion.

Electric Railways Favorable to Buses

Simultaneous with its recognition by steam railway companies, the motor vehicle is getting increasing consideration from electric railways. One hundred and fifteen electric railway companies now operate 1110 buses over 1280.08 miles of route in feeder, auxiliary or co-ordinated service.

Of the thirteen bus lines which have replaced street railway service entirely, nine are operated by the old street railway companies, while four are operated by other organizations.

The bus business can now be called a separate industry. It is no longer a by-product of motor truck manufacture. The bus is of separate design. Manufacturers are taking into account elements of passenger comfort, rough roads, city street car tracks, hazards under bridges, trolley wires and mechanical factors of utility and speed.

The full opportunity for use of motor trucks and buses will not be achieved until legislation is enacted enabling steam railways, trolleys and shipping companies to own

and operate motor vehicles in connection with their own regular line of business. Undoubtedly this will come.

Big fleets and individual vehicles are transporting food, fuel, raw material and finished product in increasing volume. The public is everywhere availing itself of motor vehicle passenger service.

The traffic survey of California shows 719 motor vehicle lines of all sorts operating under public convenience and necessity permits issued by the Railroad Commission and coming within the control of that regulatory board as to both rates and service. Some of these lines carry passengers exclusively, others passengers and express, others passengers and freight, and many freight only.

Increase in Passenger and Freight Lines

A checking of the annual reports filed with the State authorities revealed the fact that there were 61 passenger lines and 50 freight lines, which reported an annual gross revenue of \$20,000 and over. Those in this class may be grouped as follows:

Group	Number of Passenger Lines	Number of Freight Lines
\$20,000-\$40,000	26	18
40,000- 60,000	9	11
60,000- 80,000	7	7
80,000-100,000	2	3
Over 100,000	17	11
	61	50

The total operating revenues for these 61 passenger lines were \$7,950,000, or an average of \$130,327 per line. The 50 freight lines reported total revenues amounting to \$3,390,000, or an average of \$67,800 per line. The magnitude of the business of some of the larger lines is revealed by the fact that the 17 largest passenger lines showed an estimated average revenue of \$355,000 per line; the 11 largest freight lines showed an average of \$140,000.

The length of the routes of these California bus lines

Automobile Industry Doesn't Quibble!

THE term automobile deaths is undoubtedly an inaccurate one. In many cases the driver is not at fault.

The automobile manufacturer makes the car—he does not operate it.

But the automobile industry does not quibble.

It does not shield itself behind these facts. It accepts responsibility and is eager to co-operate with every organization or agency that has for its purpose reduction of traffic accidents.

vary considerably. The average length is 43 miles; 50 per cent of the lines cover 30 miles and under.

In Paterson, N. J., 164 buses under city control cared for the needs of a city of 100,000 in place of 150 trolley cars.

At Portland, Ore., 16 bus lines are now operating 200 stages.

Wilkes-Barre, Pa., has bus service of from 60 to 75 units, handling approximately 4,000,000 passengers annually.

At Youngstown, Ohio, the Pennsylvania-Ohio Company now has an installation of buses totaling 31, of which about one-half are of the de luxe type.

Since this service was inaugurated about a year ago the traffic on the lines, combined bus and electric service, between Warren and Youngstown, 15 miles, has increased 33 1/3 per cent.

It is estimated that 51,000 buses throughout the United States are in use for transporting passengers.

Common Carrier Regulation Urged

In the opinion of the automobile industry, the motor bus carrying passengers for hire should not be permitted to operate until it has applied for and secured a certificate of public convenience from a State commission. It should be required to carry public liability insurance sufficient to indemnify injury to persons and property.

The motor truck industry is in a position to aid in furnishing this transportation at the lowest possible cost, for the purchasing power of the automotive dollar is now 111 cents, as against 100 cents in 1913, while other commodities except tires and gasoline are much under 100 cents—some being as low as 45 cents.

Of the 1,620,000 trucks in use in the United States, 392,000 went into service last year.

The growing identity of the motor bus with education is a development whose importance cannot be overestimated. Throughout the United States in all rural districts school children are more and more being transported to school in automobiles and motor buses.

About 500,000 scholars are being transported daily at an annual cost of not less than \$17,500,000.

The ultimate service to be rendered to the public by the motor vehicle is limited only by the development of improved highways.

Only about one-seventh of our roads have had some degree of improvement; a recent report showed that there are 2,941,294 miles of highways, of which 430,000 miles have been improved in some measure, including those of sand-clay up to the heaviest and most durable roads known to modern engineering.

Car Owners Pay Road Maintenance

Road building is increasing yearly. During 1924 about 30,000 miles of highways will be built.

In this connection it may be said that most persons are not entirely familiar with the enormous sum total of taxation now levied against the use of passenger cars and passenger trucks. The attached table, giving the figures for 1923, the last obtainable year, is therefore interesting and important:

FEDERAL	
1. Passenger car	\$106,280,234.24
2. Commercial vehicle ...	10,908,777.31
3. Parts, tires and accessories	38,610,844.42
	\$155,799,855.97
4. Vehicles for hire	1,907,399.55
	\$157,707,255.52
STATE	
1. Registration fees, including driver's licenses.	\$188,947,862.97
2. Gasoline taxes	36,813,939.61
3. Personal property taxes	75,000,000.00
	\$300,761,802.58
MUNICIPAL	
Municipal taxes on the motor vehicle	\$13,079,209.57
	\$13,079,209.57
Grand total	\$471,548,267.67

Even these figures, impressive as they are, do not tell the whole story. On the high authority of Secretary of Agriculture Wallace, it is pointed out that since 1917 excise taxes on motor vehicles, parts and accessories have netted the United States \$589,012,921. During the same period expenditures of the Federal Government on account of Federal aid highway and forest road construction, together with all administrative outlays, amounted to \$264,782,216, or only 45 per cent of the amount collected directly as taxes from the users of our roads.

The automobile revenues of the Government for the last fiscal year ending June 30, 1923, were in round numbers \$146,000,000 and the withdrawals from the Treasury for Federal aid highway purposes were approximately \$72,000,000, which indicates that the owners and operators of motor vehicles on our highways are bearing more than double the entire Federal expenditure for roads.

Must Safeguard Traffic

One very difficult problem presents itself to the automotive industry; that is the problem of safety.

If motor vehicle transportation is to attain its full efficiency new means must be found to safeguard traffic.

An increasing toll of disaster is constantly being levied. The figures best entitled to consideration indicate 12,500 motor car fatalities in 1921, 14,450 in 1922 and 16,000 in 1923.

It is not enough to say that the total is only 1 per cent of the entire mortality of the United States or 16 per cent of all the accident deaths as indicated by the figures of 1921. Nor can we find any great measure of comfort in the fact that the deaths in 1921 were one for every 837 cars in use and only one for every 921 cars in use in 1923.

The term "automobile deaths" is undoubtedly an inaccurate one. It is used now to apply to all fatalities in which an automobile figures directly or indirectly. In many cases the driver is not at fault. Often he is an unfortunate victim who must bear much of the suffering for an accident he did not cause. The automobile manufacturer makes the car—he does not operate it.

But the automobile industry does not quibble. It does not shield itself behind these facts. It accepts its responsibility and is eager to cooperate with every organization or agency that has for its purpose reduction of traffic accidents.

The collection of accident data seems to us an essential prerequisite. Only eight States record such essential facts as time and place of the accident, whether it took place on curve or road intersection, whether the lighting of the vehicle and the highway was adequate, and whether the automobile developed any mechanical fault that might have caused the disaster.

Governor Smith of New York in a recent message conceded that Massachusetts by superior study of causes and regulation had reduced fatalities from 582 in 1919 to 522 in 1922; whereas in the same period New York State saw such fatalities grow from 1361 to 1725.

Accident Survey Being Made

The National Automobile Chamber of Commerce, in cooperation with 200 newspapers located in the principal cities, is now engaged in a great campaign of research and publicity. The various cooperating newspapers are compiling local data as to causes of automobile deaths. This and other accident data collected from all sources is analyzed monthly by the National Automobile Chamber of Commerce and sent out broadcast to newspapers everywhere, together with corrective recommendations based on this research.

We believe that every community should have either

Striking Automotive Facts Given by George M. Graham

"THERE are now 170 motor cars in use on 111 railway lines, of which 21 are trunk and the remainder short lines. The approximate mileage now covered is 7041 and 170 steam trains have been replaced."

"The actual investment in these rail cars does not exceed \$2,500,000, while investment in steam trains to provide the same service would approximate \$8,000,000 to \$10,000,000."

"One hundred and fifteen electric railway companies now operate 1110 buses over 1280.08 miles of route."

"The full opportunity for use of trucks and buses will not be achieved until legislation is enacted enabling steam and electric railway lines to operate motor vehicles in connection with their regular service."

"Since 1917 excise taxes on motor vehicles, parts and accessories have netted the United States government \$589,012,021."

"Government automobile revenues for the fiscal year ending June 30, 1923, were about \$146,000,000, while withdrawals from the Treasury for Federal Aid highway purposes were approximately \$72,000,000."

"Owners and operators of motor vehicles bear more than double the total Federal expenditure for roads."

an individual or a commission responsible for its traffic. Where measures of education are not effective, then the industry favors severest punishment for the unskilled, reckless, speed-mad or drunken who cause accidents. We advocate jail sentences and license revocations rather than fines. In fact, we have lately recommended what is perhaps the most drastic action yet suggested.

We propose that when, after due process of law, a driver is proved responsible for a serious accident or death, that in addition to all penalties now imposed that he should forfeit possession of his automobile for a period to be determined according to the seriousness of the offense.

Severe Punishment Advocated

We believe that it is not enough to take the license. Take away the car too. Let the punishment follow the car. It is argued by some that such a procedure is confiscation and would be unconstitutional. We do not agree with this viewpoint. It is present procedure in all parts of the country to take from a man that which he has used to the detriment of the public. Thus, we find police authorities confiscating murderous weapons, gambling devices, narcotics, illicit liquors and conveyances used for the transport of such liquors.

If all this be legal we believe that our plan of impounding cars is legal. But if this cannot be done under present laws, we recommend that the various legislatures enact laws to provide for such impounding. The point might also be raised that the care of impounded cars involves a serious problem and that it might be difficult for police authorities to find adequate storage space or to assure return of the cars to their owners in first class condition. Our plan does not involve any municipal pound.

We suggest one of two things: Either tie up the car in the owner's garage with police seals attached, or impound it in a public garage, at the owner's expense, also with police seals attached. At the end of the penalty period the police department would remove the seals and permit

the car to be used once more. Our counsel has drafted a law embodying this penalty and we will support its enactment in every State.

To summarize:

1. We believe in the coordination of all forms of transportation, each to serve where it most can benefit the public.
2. Highway traffic must be safeguarded, the public educated to precaution and the reckless punished.
3. The competence of every driver should be approved before he is permitted to drive a motor vehicle upon the public highway.
4. The motor truck should not compete with steam railways on long hauls, except in case of special emergency. The motor bus should not conflict with electric trolley service. Steam and electric railroads should have the fullest opportunity to use motor vehicles.
5. Financial and moral responsibility should be a prerequisite to common carrier operations.
6. We renew our belief in the policy of Federal aid for our highways.
7. All road building should be so planned and administered as to give the taxpayer the largest possible return on his investment. We believe in centralized control under engineering and economic supervision. Roads should be improved in the order of their importance, always within the limitations of a budget.
8. We oppose overloading, undue speeding or ill-advised use of highways when weather conditions imperil the public investment.
9. State programs should be carried forward by general bond issues wherever necessary, since it is cheaper to improve our main arteries of traffic than to go without them.
10. The road user should assume the burden of maintaining highways once built. Taxes should be simple in form and devoted only to road purposes. Discriminatory war levies should be removed, and motor vehicle taxation left to the States.

Durex, a Bearing Material Which Holds Oil Like a Sponge

A copper-tin-graphite bronze which absorbs up to one-fourth its own volume by capillarity through myriads of tiny, evenly distributed pores, and maintains an oily bushing surface. Offers insurance against shortage or stoppage of lubrication.

THE self-lubricating bearing metal which the General Motors Research Corporation has developed and put into production has attracted widespread attention. There have been rumors concerning it drifting about for over a year, and it was announced in our news columns some time ago. Here are the facts regarding its properties, uses and methods for designing and installing.

Durex bearing material is an absorbent copper-tin-graphite bronze. The graphite exists in a finely divided state, evenly distributed throughout the bronze and interlocked between the crystals. The absorbent qualities of the material are due to the capillary action of myriads of tiny pores distributed throughout its mass. The metallic part is composed of the alpha crystals of copper-tin solid solution, such as make up the matrix of ordinary bearing bronzes.

Durex is self-lubricating to the extent that it holds within its walls up to one-fourth of its own volume of lubricating material, which latter can be removed only by special methods. The oil within the bushing walls maintains an oily bushing surface. It may be wiped off but the surface rapidly becomes oily again. This ability to replenish oil to the bearing surface insures the bearing against running dry.

The structure of Durex is such that it will not gall on a hard or soft shaft even though all the oil in the bushing be used up.

Made in Two Grades

Durex is usually made in two grades. The grade known as "Standard" has an elastic limit of 2000 lb. per sq. in. in compression and its pores form 25 per cent of the total volume. This grade is used in the majority of installations. The other grade, No. 1, is used for heavy duty. It has an elastic limit in compression of 4200 lb. per sq. in., and 15 per cent of its volume is taken up by the pores. The composition of the two grades is identical, the only difference being in the degree of porosity. Durex No. 1 is recommended for piston pin bushings, crankshaft main bearings, universal joint bushings and other bearings subjected to shock and heavy loading. Standard Durex is used where there are steady loads and where the product PV is less than 50,000, P being the unit load on the bearing, in lb. per sq. in. of projected bearing area, and V the shaft peripheral speed in feet per minute.

The composition of the material can be modified to take care of special bearing conditions. The customary ratios of bearing length to bearing diameter for various classes of service, as given in reliable engineering handbooks, may be used in designing the bearings. Where the ratio of bearing length to diameter is large, it is better practice

to put in two shorter bearings, allowing from $\frac{1}{8}$ in. to $\frac{3}{16}$ in. for oil space between the two. It is not advisable to make bearings longer than 3 in. for reasons having to do with the process of manufacture.

Classes of Bearings

The amount of additional lubrication required by the bearings varies with the type of service as follows:

Service	PV	Additional lubrication
Heavy duty.....	>50,000	Plentiful
Medium duty.....	<50,000	Limited
Light duty.....	<20,000	None

Oil in any quantity can be supplied to a bearing without fear of washing out the graphite, which is locked between the crystals of bronze. The only way in which the graphite can be removed is by melting the metal.

The advantages claimed to result from the use of Durex in Type 1 installation are as follows:

- (1) Long life with little wear.
- (2) Freedom from injury to journals if oil supply is temporarily cut off.
- (3) Insurance against burning out bearings if oil supply is temporarily cut off.

Practically all bearings in this class should be made of the No. 1 material.

Examples of Class 2 are rocker arm bushings, universal joint bushings, small generator and motor bearings and light line shaft bearings.

This class of bearings should be provided with wick oilers or with a sealed-up reservoir of oil, which feeds the oil either through a hole in the bushing direct to the shaft or to the outside of the bushing, whence it reaches the shaft by seeping through the pores in the bushing. The advantages of Durex in this class include those of Class 1 along with an economical use of oil. Bearings in Class 2 are made of either the No. 1 or Standard Durex, the selection depending on the magnitude of the load and whether it is static or kinetic. For a high-speed, low-load combination with PV less than 50,000 the more porous Standard material is best, while a low-speed, heavy-load combination requires No. 1 with its higher compressive strength.

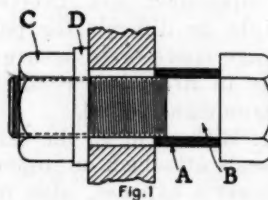


Fig. 1

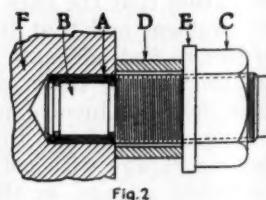


Fig. 2

Inserting bushings

Class 3 includes all light load, low-speed, intermittently loaded or oscillating bearings, for which PV is less than 20,000. This class of bearing will run satisfactorily without lubricant other than that held in its pores. All bearings in Class 3 should be made of Standard Durex. The special advantage of this class of bearing is that it requires no attention.

Determination of Wall Thickness of Bearings

Tests have shown that a thicker bushing wall means a longer life for the bushings when run without additional lubrication. Therefore all bearings which are intended for service without additional oil supply (Class 3) should be designed with as thick a wall as possible.

Increased wall thickness has less effect on bearing life in the case of bearings in Class 2 and none in the case of bearings in Class 1. The wall thickness necessary for bearings of Classes 1 and 2 depends upon the diameter; it must be sufficient to prevent distortion due to assembly. The thickness necessary to obtain the requisite strength is a function of the bushing inside diameter. An approved formula for computing this thickness is

$$T = 0.125 \sqrt{B}$$

where T = thickness and B = bushing inside diameter. For bushings that are heavily loaded, it is advisable to use the minimum allowable value for wall thickness in order to reduce to a minimum the deflection of the bushing wall under load. For No. 1 Durex in compression, E is 570,000. A bearing with a 7/32 in. wall under 500 lb. per sq. in. load would deflect 0.00019 in. Under the same conditions, a bearing of Standard Durex would deflect 0.00035 in. These deflections are well within permissible limits. Below is given a table showing the wall thickness obtained from the formula $T = 0.125 \sqrt{B}$ and also the minimum thickness of wall that can be pressed in place without damage to the bushing.

O.D.	Minimum Wall Thickness In.		$T = 0.125 \sqrt{B}$
.437	1/16	0.0625	0.0700
.625	1/16	0.0625	0.0885
.750	1/16	0.0625	0.0990
1.000	3/32	0.09375	0.1130
1.250	1/8	0.125	0.1250
1.500	1/8	0.125	0.1400
2.125	5/32	0.156	0.1630

Method of Installation

Durex bushings are installed with 0.003 to 0.005 in. press fit allowance up to 1.00 in. outside diameter and with 0.004 to 0.008 in. press fit allowance above 1.00 in. outside diameter. The pressing-in operation causes a reduction in the inside diameter. The amount of this reduction is a function of the press fit allowance, the wall thickness, the diameter of the bushing and of the type of material used. Since this decrease in inside diameter plays an important part in the quality of the bearing surface and in the finished size of the bearing hole, it has been carefully determined for a series of bushing sizes.

A special method of installing the bearings has been worked out. The bushing to be installed is made with an inside diameter 0.001 to 0.002 in. larger than the desired finished hole diameter and is pressed into place on a plug which is 0.0002 to 0.0004 in. larger in diameter than the desired finished hole diameter. Pressing the bushing in place causes the hole to close in against the plug enough to produce a slight flowing of the material. When the plug is withdrawn, the elasticity of the material causes the hole to close up from 0.0002 to 0.0004 in., bringing it within the desired limits. This method of installation is

claimed to produce an excellent bearing surface and to maintain the inside diameter within 0.0005 in.

In cases where two or more bearings must be in alignment, the usual method of line reaming the bearings after installation cannot be employed. Reaming is detrimental to the bearing surface, consequently the holes which receive the bearings must be line-reamed before the bearings are installed. Then the Durex bearings are pressed in on a line plug. If the bearings are concentric in the first place, this method of installation will result in perfect alignment of the set of bearings. To show what limits are necessary on receiver holes, bushing and shaft sizes, in order to hold the finished inside diameter to within 0.0005 in., a concrete example will be worked out.

Determining the Bushings

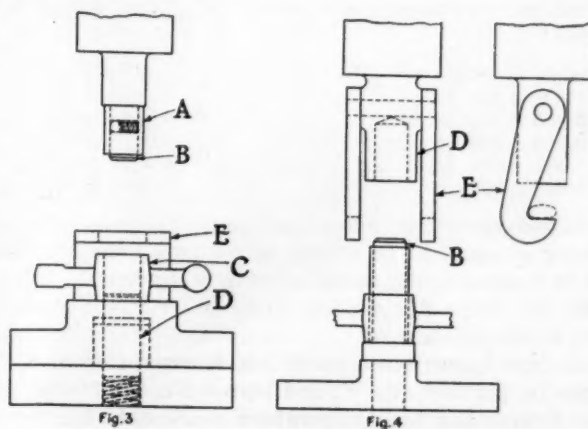
Given the shaft size and having determined what thickness the bushing wall should be, the diameter of the hole to receive the bushings can be determined. Assuming the shaft to be of 0.750 in. diameter, and the bushing wall 1/8 in. thick, then the hole receiving the bushing will be nominally 1.000 in. In the process of manufacture, Durex bearings are sized to plus or minus 0.0005 in. on both inside and outside diameters. With this information, we can write the tolerances on the shaft, bushing and receiver hole sizes.

Shaft	0.7492-0.7498 in.
Bushing O.D. before installing.....	1.0035-1.0045 in.
Receiver hole in casting.....	0.9995-1.0005 in.
Size of installing plug	0.7518-0.7523 in.
Bushing I. D. before installing.....	0.7535-0.7545 in.

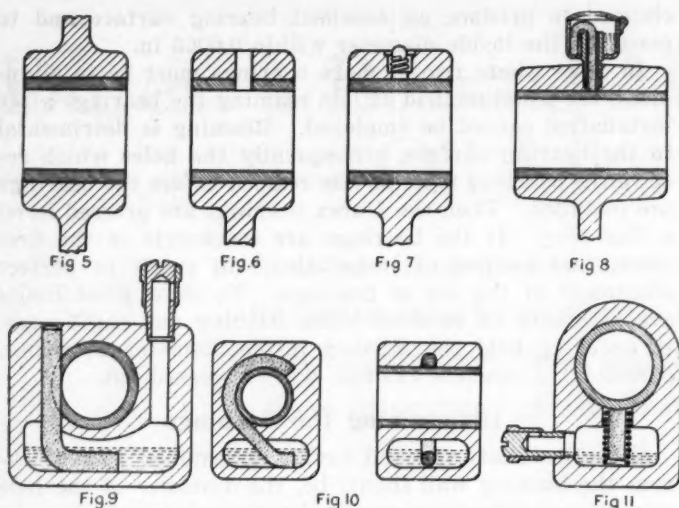
This method of installing preserves the desired porous structure at the bearing surface. Any machining operation, such as burnishing, reaming, grinding or scraping, to size the bearings, would more or less close up the pores which act as oil ducts. The life of Durex bearings installed with a plug as recommended, running without additional lubrication and with PV=30,000, was found to be 450 hours. The life was reduced to 160 hours when the bearing was sized by reaming.

The bearings for these tests were initially impregnated with oil but not furnished with any additional lubricant during the test. Tests were made with both hardened and soft shafts. The life of the bearing was considered ended when 0.001 in. wear had occurred in the bushing. No measurable wear had occurred on any of the test shafts.

Since it is not desirable to size the bushings by reaming, it is advisable to have fixtures suitable for installing them on a sizing plug. The initial installation in a factory is usually done on a punch press, and arbor press, or on a special fixture. In replacing bushings that have become damaged in service, it is usually necessary to resort to improvised tools.



Forcing bushings into rocker arms



Methods of lubricating Durex bearing

Fig. 1 shows a suitable tool for installing a bushing without the use of arbor press or vise. Bushing A is placed on bolt B which is inserted in the hole. The nut and washer C and D are then assembled. By turning the nut, the bushing is drawn into place. The diameter of the bolt can be made such that it will act as a sizing plug when the bushing closes in on it. After the bushing is in place, the nut is removed, and the bolt rejected with a rap from a hammer.

Fig. 2 shows a tool for installing a bushing in a blind hole. Bushing A is placed on plug B and forced into the hole in casting F by means of a clamp, vise or press. Then sleeve D, washer E and nut C are placed in position as shown and the plug is withdrawn from the bushing by turning nut C. The installing plug should never be rapped sideways to loosen it in the bushing hole.

Fig. 3 shows the bushing A held in place on plug B. The member to receive the bushing C (in this case a rocker arm) is held in a fixture on the bolster plate of a punch press located by plug D. The ram descends and presses the bushing into the rocker arm hole. On the up stroke the plug is withdrawn from the rocker arm which is held from rising by stripper bracket E.

Fig. 4 shows a method which may be used for installing bushings in Class 1. The bushing and rocker arm are placed as shown on the installing plug B. Ram D comes down over plug B and presses the bushing into place. Two arms E working on a cam properly timed, engage the rocker arm and remove it from plug B. This method is undesirable for Class 2 and 3 bushings because of the sliding of the bushing over the installing plug, which has a tendency to close the pores.

Running clearances for Durex bearings should be as follows:

Nominal Journal Dia.	Running Clearance
Up to 0.250 in.....	0.0010-0.0020 in.
0.250-0.500 in.....	0.0015-0.0025 in.
0.500-1.000 in.....	0.0015-0.003 in.
1.000-2.000 in.....	0.0020-0.0035 in.
2.000-3.000 in.....	0.0030-0.0045 in.

These figures are general and apply in cases where the bushing is retained in a steel or an iron housing. Where it is in a non-ferrous metal housing and runs at high temperatures, these figures for running clearance would require some modification.

Standard Durex has a coefficient of expansion of 0.00094 in. per in. per 100 deg. F. and Durex No. 1 0.00084. With these figures and the temperature coefficients for the supporting metals, which can be obtained from any engineer-

ing handbook, the necessary running clearances for high temperatures can be readily determined.

Bearings in Classes 1 and 2 that require additional lubrication can be equipped with standard oiling devices or with modifications of them. The oil will then filter through the bushing pores to the bearing surface. When oil must be available in larger quantities than could be fed through the pores, the oil duct should lead through the bushing to shaft.

Figs. 5 to 14 show the oiling systems that work well with Durex according to the manufacturers. The installation shown in Fig. 5, where no special provisions for lubrication are made, is recommended only for cases where the product PV is less than 10,000. Fig. 6 shows an oil hole drilled through the bearing and bushing, which is a good plan where occasional oiling is desirable. In Fig. 7 the oil hole is provided with a ball oiler.

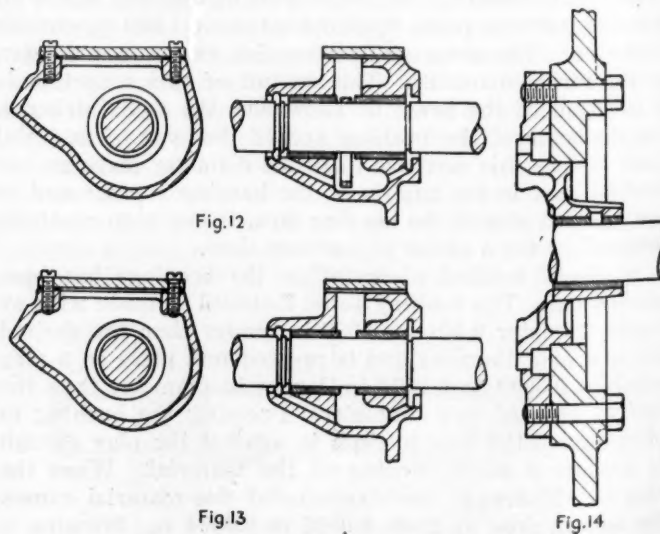
Fig. 8 shows an installation with additional lubrication provided by means of a wick oiler, feeding oil to the outside of the bushing, the oil passing through the pores of the bushing to the bearing surface. This is said to be a good type of installation for load-speed conditions up to PV = 50,000. Fig. 9 shows another wick oiler installation, the wick extending through the bushing to the shaft.

In Fig. 10 is shown a sealed up type of oil reservoir, the wick being in contact with the outside of the bushing. One supply of oil is intended to last for the life of the machine. Fig. 11 is a variation of Fig. 10.

In Fig. 12 is shown a standard ring oiler, which is said to be desirable where PV is greater than 50,000. Fig. 13 shows an installation similar to Fig. 12, but instead of an oil ring, wool waste is packed around the shaft and in the oil reservoir. Fig. 14 shows an installation in an engine where crankcase oil is available for lubrication. The oil runs in the hole on top of the bushing and is returned to the crankcase by an oil slinger and duct.

Regarding the use of Durex for crankshaft main bearings, the makers say the same oiling system as with any other bearing material can be used.

No machining or grinding should be done on a casting after Durex bushings have been pressed into it. The chips and dirt from these operations are liable to stick on the bearing surface and cannot be entirely removed, due to the oiliness of the surface. Washing in a hot caustic solution to clean a part housing a bushing will tend to remove the oil from the latter. This is especially objectionable for the reason that the life of the bushing depends on the oil held within its walls.



Ring-oiled and splash-oiled bearings

Continental Announces Special Engine for Express Bus Service

Six-cylinder powerplant has piston displacement of 331 cu. in. and develops a maximum of over 70 horsepower at 2,300 r.p.m. Built for rapid, inter-city passenger work with long, non-stop runs.

AS a part of its program to offer the trade a special Red Seal engine for every specific need, Continental Motors Corp. announces a new motor for passenger bus service. This is the Model 6B, a $3\frac{3}{4}$ by 5-in., six-cylinder engine with a piston displacement of 331.6 cu. in. and an S. A. E. rating of 33.75 hp. On block test this engine develops 36 hp. at 1000 r.p.m., 43.5 hp. at 1000 ft. per minute piston speed, and peaks at 70 hp. at 2300 r.p.m.

The new engine is developed specially for inter-city express work, and is built to give long life even in this severe service, where long non-stop runs are a part of the day's work. It has a number of distinctive bus engine features which include:

An extra deep cylinder head, providing an unusual volume of water, ample cooling facilities and greater strength; a cylinder head gasket constructed for heavy-duty service; extra large oil lines; a gear type oil pump of exceptional size; helical timing gears of extra wide face, two of the gears being of steel, case hardened, and the other two of hard, fine-grained, semi-steel, with accessible end-thrust adjustment.

Pistons and connecting-rods are designed for extra heavy service, the pistons having exceptional capacity for heat dissipation, and crankshaft main bearing caps are of drop-forged steel.

Connecting-rod lower-end bushings are cast directly into the rods, and a separate flywheel ring gear of steel is shrunk into place.

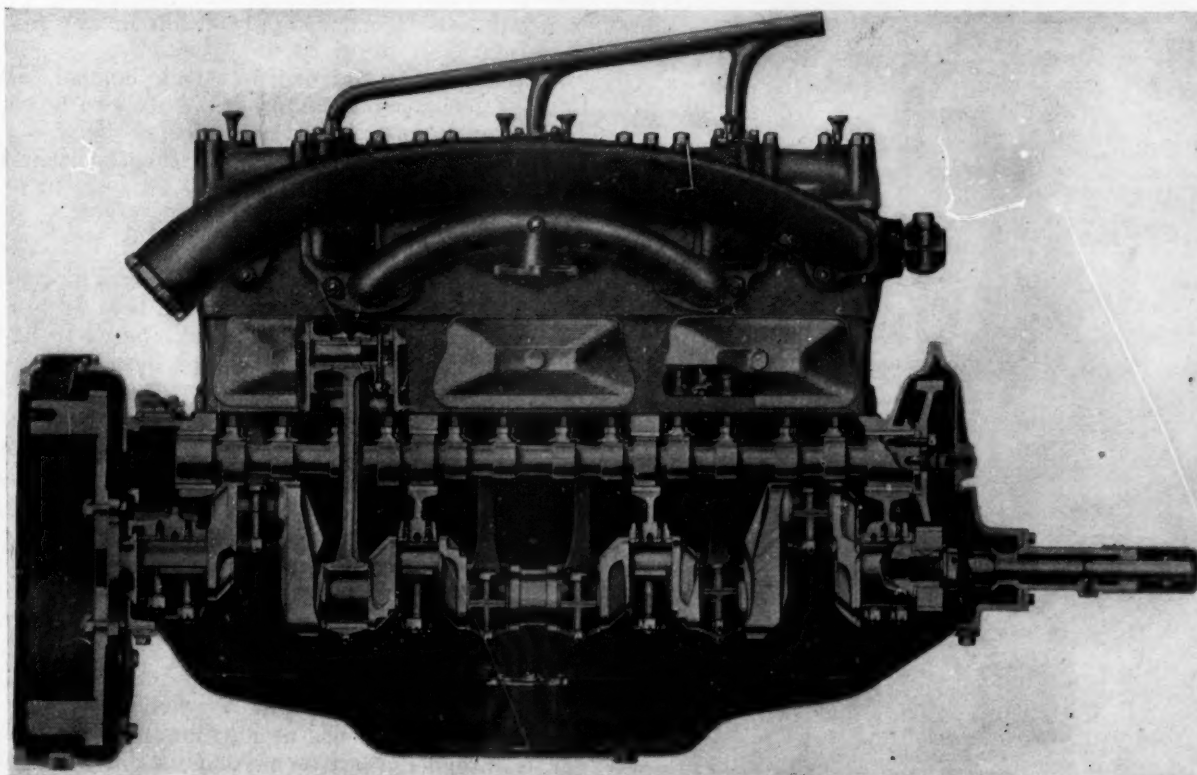
Silchrome valves, with easily replaceable bushings for valve stem and push rods, and adjustment for crankshaft end thrust are other features.

S. A. E. standards are adhered to, and provision is made for mounting special engine-driven equipment, such as generator, magneto, distributor and (if desired) an air compressor.

Engine of Four-Unit Construction

The engine is of the four-unit construction, embodying a cast-iron cylinder head and cylinder block, an aluminum crankcase and a pressed steel oil pan. The flywheel housing is a separate unit of cast iron, and the timing-gear cover also is of this material. The engine is designed for three-point support on the main frame of the chassis. One support is located centrally on the timing-gear housing at the front, the other two being cast with the flywheel housing. The compression volume is equal to 23 per cent of the total volume at the end of the out stroke.

The crankshaft is a four-bearing type, with bearings $2\frac{3}{8}$ in. in diameter. The front bearing is $2\frac{13}{32}$ in. long. The two intermediary bearings are $1\frac{3}{4}$ in. long each.



Longitudinal section of Continental six-cylinder bus engine, Model 6B

and the rear bearing is $3 \frac{1}{16}$ in. long. The crankshaft is drilled for full-pressure lubrication to all main and connecting-rod bearings. The upper halves of the main bearings are removable, and the lower halves are forged steel with cast babbit linings. Connecting-rods are drop forged of I-beam section, and have pressed-in bronze bushings in their upper ends. Pistons are of cast iron, $4 \frac{1}{2}$ in. long, well ribbed for heat dissipation and carefully balanced in sets. Each piston has three rings of $\frac{3}{16}$ in. diameter, all located above the piston pin. The latter is hollow and of $1 \frac{1}{8}$ in. outside diameter; it is held in the piston against endwise motion by locking rings at both ends, and is prevented from turning by a heavy set screw.

Valves are located on the right-hand side and are of silchrome steel. They have a head diameter of $1 \frac{15}{16}$ in. and a clear diameter of $1 \frac{13}{16}$ in., the valve lift on both intake and exhaust being $\frac{5}{16}$ in. Push rods are of the mushroom type. The camshaft, like the crankshaft, is a four-bearing type, the bearings being pressed into the crankcase.

Intake and exhaust manifolds are cast together, forming a hot spot which assists materially in the vaporization of low-grade fuel. The flywheel is of cast iron, weighing 90 lb., and can be supplied for either plate or disk clutches. The flywheel housing is machined for No. 3 S. A. E. flange.

Lubrication is by the full-pressure system, the oil pump drawing its supply through a large, fine-mesh screen in the base chamber. Cooling water is pump circulated, the pump being of the centrifugal type and driven off the auxiliary shaft at $1 \frac{1}{2}$ times crankshaft speed. A large fan-driving pulley and an adjustable fan-mounting bracket are supplied as part of the engine, but no fan is included, on account of the variations in fan size with different installations.

Provision is made for various standard units as follows: Carbureter, vertical outlet type, $1 \frac{1}{2}$ in. S. A. E. flange, bolting to intake manifold; clutch, 12 in. plate or disk type, S. A. E. standard; spark plugs, $\frac{7}{8}$ -18 U.S.F. thread, located in cylinder head; magneto, can be mounted on left side of engine and driven off water-pump shaft, either

separately or in tandem with generator; distributor, S. A. E. type B, driven by vertical shaft and spiral gear; lighting generator, S. A. E. bracket mounting, on left side of engine and driven by water-pump shaft; starting motor, S. A. E. sleeve-type mounting, $3 \frac{1}{2}$ in. diameter, on right side of flywheel housing, driving through teeth in flywheel.

The complete engine weighs 700 lb. with standard equipment.

Stromberg Marketing Electric Windshield Wiper

STROMBERG MOTOR DEVICES COMPANY, 58 East Twenty-fifth Street, Chicago, have added to their line an electric windshield wiper for driving off the storage battery by a high-speed series type motor, which gives high starting and stalling torque with current consumption said to be only 1.5 amperes.

The driving mechanism consists of a worm and worm wheel. A pin on the wheel engages a cam which drives the wiper arm on its forward movement. At the end of the stroke the pin leaves the forward driving cam and engages a reverse cam, which drives the wiper on its return stroke.

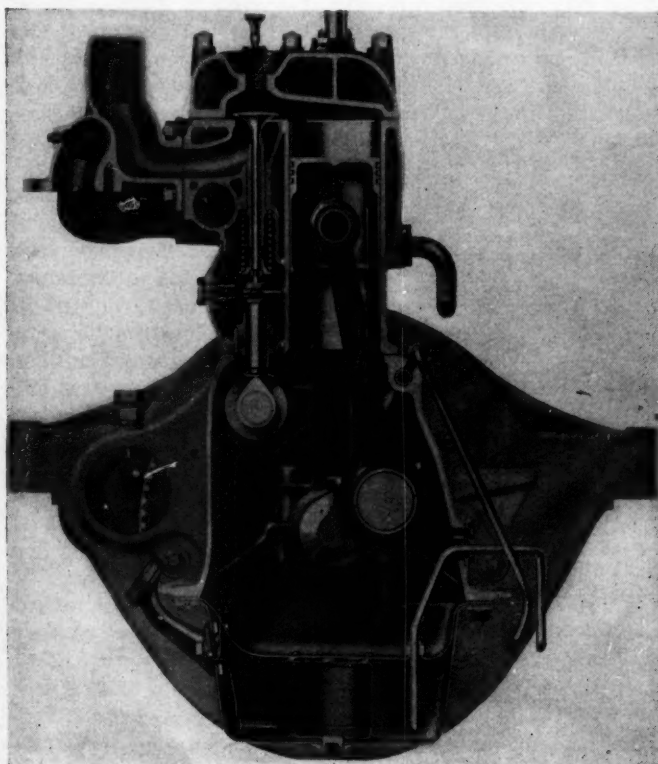
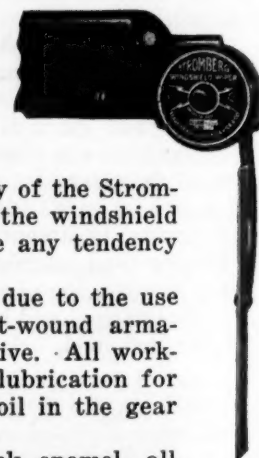
Close adherence of the wiper arm to the windshield glass is accomplished by the use of a spring wiper arm of flat cross-section, which exerts a continuous and correct wiping pressure.

The compact design of the body of the Stromberg wiper permits a close fit to the windshield frame, the aim being to decrease any tendency to work loose due to vibration.

Operation is said to be silent, due to the use of a heavy armature shaft, split-wound armature and carefully fitted worm drive. All working parts are assured of proper lubrication for many months from a supply of oil in the gear housing.

The wiper is finished in black enamel, all exposed parts being rustproof. Only two holes have to be drilled in installing the device.

The wiper is obtainable for use with either 6- or 12-volt batteries.



Cross section of Continental Model 6B engine

A SMALL car of unusually light weight has been placed on the German market by the boat-building works Zeppelinhafen in Potsdam, which claims to have originated the construction of boats of light metal. The car referred to is equipped with a two-cylinder horizontal opposed engine of $2 \frac{11}{16}$ -in. bore and the same stroke, which is claimed to develop 6.5 hp. on the brake.

The engine is air-cooled, the flywheel being developed as a cooling fan. Aluminum pistons are used and the crankshaft is mounted on ball bearings. The gearset gives three forward speeds and the rear axle is fitted with a differential. The wheelbase is 85 in. and the track 43.3 in.

The wheels carry 26 by $2 \frac{1}{2}$ -in. tires and the car is claimed to have a maximum speed of 37.5 m.p.h. Its weight empty is 660 lb., this low weight being due largely to the extensive use of duralumin in the body. The car is intended for two passengers only, the two seats being located side by side.

Lower Cost and Weight Among Chief Advantages of Fabric Bodies

Can be built for about 15 per cent less than metal panel type.
So says K. L. Childs in addressing Detroit S.A.E. Section Meeting.
Metal and painting departments eliminated and all production operations confined to trim shop after wood frame is completed.

LIGHTER weight, lower production cost, increased durability of finish and greater riding comfort, were advanced as the outstanding advantages of the fabric body by K. L. Childs of the Fabric Body Corporation at the meeting of the Detroit Section of the Society of Automotive Engineers on May 8. In addition to these features, it is asserted that the car equipped with a fabric body is subject to reduced insurance rates and provides a degree of safety which is in every respect comparable to that of the conventional metal body.

Mr. Childs' paper, covering the latest innovation in body construction, was supplemented by a discussion of a related subject, Window Lifters, by Mr. S. W. Nicholson of the Dura Company, who advocated closer cooperation between body and window regulator manufacturers and the adoption of at least three standards for window glass lengths.

In approaching the development of fabric bodies as produced by the Fabric Body Corporation, Mr. Childs first discussed the change in attitude of the public and the manufacturer between the first exhibition at New York in 1923 and the following show. In 1923 the public attitude was decidedly critical, skeptical and somewhat inquisitive. Following are a few of the questions which represented a cross section of the public's reaction at that time:

How long will this type of body stand up?

How can this type of body be repaired?

How does the price compare with the regular metal body?

How can this body be refinished?

At the 1924 shows, said Mr. Childs, this attitude was changed entirely, and there was every indication of widespread acceptance of the fabric body. Interest was keen, with no objections regarding the slight difference in appearance. Questions this year can be summarized as follows:

Where can I secure one of these bodies?

What companies are producing these bodies now?

When will these bodies be in production?

What are the insurance rates for a car equipped with one of these bodies?

The statement, "just another chump gone wrong," which was made by one prominent body manufacturing executive, practically crystallized the attitude of the majority of manufacturers in 1923. Nevertheless, this same executive, said Mr. Childs, built his first fabric body within six weeks after the Boston show, has built more than 100 bodies of this type up to date, and recently stated that he expected to discontinue his metal and paint shops in the near future.

His attitude, asserted Mr. Childs, is indicative of the general trend which has been influenced by the appearance of the original show car, which was exhibited again during the 1924 show, and, barring accident, will be shown again during the 1925 show. In the first year's service this car was driven more than 20,000 miles in all sorts of conditions of heat, cold and moisture and still retains its "new" appearance.

Continuing, Mr. Childs said, in substance:

From the standpoint of construction, the wood frame of the fabric body is almost exactly similar to the conventional type. In some cases, more light strainers are added to provide additional points of support for the wire upon which the fabric is later placed. In addition to this difference, substantial grooves are rabbeted into the wood members wherever the wire screen or fabric is to be attached by staples or tacks.

Corner posts and door sills are reinforced by strap-iron braces, but no attempt is made to increase the rigidity over that of the conventional wood frame, as it is recognized that the fabric coating is more resilient than the usual steel or aluminum panels. Therefore a slight element of resiliency is an added advantage, as squeaks and rattles are eliminated by taking the strains off of the joints of the structure.

After the wood frame is delivered to the trim shop, a coat of galvanized wire screen of 1/2-in. mesh and 19 gage is stretched over the structure and fastened at every second strand at the supporting members by galvanized staples. The staples are driven into the rabbeted grooves and the wire is pounded into the adjacent faces of the wood members.

Stretching Operation Simple

No mechanical appliances are required for this stretching operation, as the tension which a man can exert with his fingers has been found sufficient. Expanded wire lath was tried for this application, but proved entirely unsuccessful, as the layer of cotton wadding which is laid on next was cut into shreds by the sharp edges of the lath.

Following the application of the wire screen, two thicknesses of ordinary cotton wadding are laid on and covered by a layer of canvas, which is stretched into place and fastened by tacks which again are driven into the wood structure. As in the case of the wire screen, the canvas is stretched altogether by hand. In the more recent bodies the canvas is applied in sections to facilitate subsequent service repairs if required.

Finally the fabric is stretched over the canvas and tacked in place. The tacks, treated by a rustproof process, are placed about 1/2 in. apart. At the door posts

and window enclosures the edge of the fabric is carried around to the inside, where the tack heads will be concealed by the interior trimming.

Like the canvas, the fabric now is applied in sections. Where exposed, the edges at the joint between two adjacent sections are concealed by metal drive-on molding, or a more recent development which consists of a metal channel which is nailed on with its back to the fabric. After being nailed in place, this channel is filled with a strip of fabric, which completes an assembly of fabric beading, which is edged by bright metal.

Requires Successful Finish

A successful finish, in the opinion of the Fabric Body Corporation, is dependent chiefly upon two factors. The canvas surface must be smooth, and to achieve this condition tack heads and staples must be driven below the surrounding surface, or the wave which is formed at the head will be magnified at the outer surface.

The second consideration is of vital importance and involves the fabric and its characteristics. Only a square or box weave fabric, which has the same stretch in the directions of the warp and fill can be used. Otherwise, panels are bound to sag, with resultant high lights that are the downfall of any finish. The fabric must also be flexible and resistant to abrasion, waterproof, and capable of withstanding oil, tar and all of the other elements that are encountered upon the road.

The surface of this fabric resembles black long-grain lustrous leather. Black is the only color which has been used in any quantity, as its durability has been demonstrated in every test. Other colors are possible, but the manufacturer does not feel warranted in attempting them at this time.

This fabric is of double texture, the outer or leather portion being bound to the inner portion, which serves as a filler next to the canvas, by a high-grade waterproof cement. The outer surface is highly resistant to the abrasive action of mud and road dust and maintains its bright luster indefinitely, providing it is given ordinary care, which consists of occasional washing and polishing. If required as a result of accident, new sections can be inserted and will show no marked difference from the surface which has been exposed to several thousand miles of service.

Decks, such as the top, are reinforced by an additional layer of chicken wire of 1-in. round mesh. Ribs at the pillars and cowl are formed without any undue stretching due to the pliability and resilience of the fabric. No clamps are used for stretching, as the pressure of a man's fingers has been found amply sufficient.

Care must be exercised in the location of the edge of the fabric panel in relation to an adjacent radius. Where indications of fullness which cannot be removed are shown, the edge of the section is brought closer to the radius. When completely applied, the fabric surface may be flowed slightly by pressure of the fingers, but upon release immediately resumes its normal smooth appearance with no evidence of wrinkling or sagging.

Final Appearance Approved

No opposition has been shown to the grain appearance of the entire car. In fact, it is almost impossible to distinguish this type of finish from black enamel at any distance. Then, again, people have become accustomed to the grain appearance due to its wide use above the belt lines of many closed bodies.

In production, the same practice as for bodies applies to door finishing. The fabric is carried clear around the edge of the door and the jamb and the tacks are

concealed under the interior finish. All of the fabric bodies which have been made so far weigh from 25 to 110 lb. less than the equivalent metal bodies. Squeaks are practically unheard of and the rumble which usually is present in a closed body is absent.

Production costs are greatly reduced, particularly when plant investment and maintenance are considered. Body for body, of the same quality, the fabric body can be produced for at least 15 per cent less than the metal body. The finish is applied by the yard instead of by the brush. The paint and metal shops can be eliminated from the production scheme. The frame is brought in from the wood shop and from that point production is on a trim shop basis.

In practice it has been possible to have two men working on exterior finish and one man installing interior finish simultaneously. The plan of one custom body builder who anticipates closing out his metal and paint shops has already been discussed. Another custom body builder is laying out a space 60 ft. square and anticipates a production of fifty bodies per day from this space. One custom shop has produced a complete fabric body in four days. The manufacturer who plans the production of fifty per day finishes the body in the same day that the frame is delivered to the trim shop.

A similar feature applies to service repair work, a period of 3 to 4 hr. being all that is required for ordinary repairs which send the car out looking as good as new. This is, of course, dependent to some extent upon the care which the body has received. If washing and polishing have been utterly neglected, the new fabric section will appear somewhat brighter than the balance of the body.

Infrequent Washing Necessary

It is stated that these bodies require washing at less frequent intervals than any varnish or enamel finish. Ordinarily dirt and dust can be rubbed off with a dry cloth or the hand with no damage to the surface of the fabric. The luster can then be brought to its original condition with the application of any good polish.

In response to questions which have been raised regarding the characteristics of this type of body under circumstances similar to a collision, the company cites the experience of a California driver whose fabric-bodied car went off of a cliff and turned over twice, with neither of the passengers being injured. The greater portion of the strength of a metal body is in the underlying wood frame work, the metal panels themselves offering but little resistance to severe shock. Any advantage which the metal body has is offset by the possibility of quick repairs which restore the car to practically its new appearance.

Fire and theft insurance rates have been reduced from \$7.50 for the steel-bodied car to \$6.40 for the fabric body. Collision and other forms of insurance are following a similar trend. The theft rate is reduced for the present due to the small number of fabric bodies on the road, as a car fitted with one of these bodies is readily identified. Fire and collision rates are affected by the possibilities of sectional repairs, which preclude the necessity for refinishing the entire body in order to restore satisfactory appearance.

In view of these advantages, along with the attractive features of the engineering and manufacturing program, one commercial body maker has laid down a schedule of 10,000 Ford sedan bodies. The Fabric Body Corporation does not build bodies in the commercial sense, but is organized to render engineering service and grant licenses for the construction of the types which they have developed. One open body, a roadster, already has been

built, and has similar advantages, but attention is being concentrated on closed body construction.

In comparing this type of construction with the Weymann type, Mr. Childs stated that in his analysis the purpose of the latter type was merely that of a tent or enclosure. No portion of the passengers' weight is carried by the body structure, which is extremely light and flexible and in his opinion unsuited as yet for our conditions and methods of driving. In the Weymann construction the seats and all of the passengers' weight are supported directly on the chassis and the enclosure is entirely independent of the interior arrangement.

On the other hand, he states that the Fabric Body Corporation has no wish to introduce any radical experiments, but are attempting to start with the wood frame, which is a satisfactory unit, and from that point eliminate the difficulties of the metal type construction by substituting the advantages of the fabric construction.

In discussing window lifters, Mr. Nicholson stated that American manufacturers of this type of device have made considerable progress, as they have picked up the design where European designers had left off. Furthermore, the vogue of the closed body in this country provides an additional stimulus to the design of all body fittings, among which the window lifter is important.

Simplification of body design has eliminated some of the troublesome problems of the window lifter manufacturer, although the engineer can aid considerably by paying more attention to standardization of lengths of travel and glass lengths. In the case of his company, where a lifter comprises about 30 parts, more than 750 different parts were involved in the manufacturing program until some effort was made to bring the various body builders closer to some standard practice. At present 90 per cent of the manufacturers approached are now buying lifters of a standard design.

There appears to be great possibility of the return of the lever type lifter, particularly for the driver's door. Lifters of other types are very satisfactory for the other windows, but there is every indication that the quick-acting lever type for the driver's door will come back and remain permanently. The roller and cord type, which is used extensively abroad, offers very little promise in the American field, due to the amount of cutting out and forming which must be given the woodwork of the door. Mr. Nicholson condemned the lack of standardization of window heights and widths and window channels as being an extravagance which is not compatible with the keen merchandising competition of the existing market.

Parts Photographs with Good Background

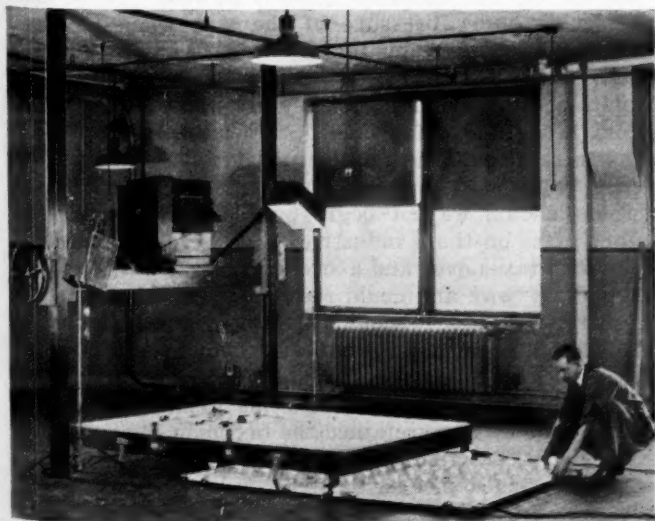
IN the preparation of photographs of parts used in chassis construction, such as are reproduced in parts lists, considerable difficulty is encountered in getting a clear, white background unless parts of the negative or photograph are retouched or blocked out, and even then the results are not entirely satisfactory while the cost of retouching is considerable.

An improvement on the conventional method, according to *Light*, house organ of the National Lamp Works, has been put into use by Philip Filmer, of the photographic department, General Motors Corp., Detroit. This has taken the form of what is termed a background box, consisting of a wood frame mounted on casters and covered with a heavy sheet of plate glass with both surfaces ground. The frame measures 7 ft. x 5 ft. 4 in. and is 10

in. deep. Under the glass is placed a sheet of tracing cloth or paper intended to help diffuse light, and under this is a board of about the same size as the frame upon which are mounted banks of 25-watt frosted Mazda lamps in sign sockets placed on 8½ in. centers.

The camera is mounted on a vertical rack and equipped with a reversing prism. The articles to be photographed are placed on the ground glass and illuminated from above, the exposure being made in the usual manner. Thereafter the lamps under the ground glass are switched on, and the background thus illuminated is overexposed for 1.75 to 10 times as long as the first exposure. The effect of the reversing prism is counteracted by reversing the film so that the sensitized surface is back of the film or glass. This is said to reduce halation as well as to give a negative from which prints with numbers or type reading correctly are readily made.

A photograph of the equipment in question is reproduced in the accompanying cut.



Special background box and other apparatus used by General Motors for photographing parts

“**D**IRECT Current Dynamo and Motor Faults,” by R. M. Archer, deals with causes and cure of troubles commonly experienced in the operation of d.c. motors.

The author treats his subject as he might a medical subject. The book is divided into two sections, the first of which treats with common diseases, the symptoms to which they give rise and important general considerations. The second part is given over to diagnoses with appropriate treatment. He states in his preface that the aim of the book is to encourage the experimenter to apply first principles in a scientific way.

It is elementary throughout, and should prove useful to students and those in charge of electrical installations.

Published by Sir Isaac Pitman & Sons, Ltd., Bath, England, and obtainable from Isaac Pitman & Sons, 2 West Forty-fifth Street, New York, for \$2.25.

Senate Votes to Eliminate Entire Tax on Parts and Accessories

The Walsh amendment of the tax bill which provides for doing away with all levies on parts and accessories failed to pass one day, was revived the next and passed.

ELEVENTH hour changes in the automobile section of the new tax bill passed by the Senate adds a total of approximately \$5,000,000 in the Federal excise tax reduction, making the total probable saving to the automobile industry under the new measure of thirty to thirty-five millions of dollars, as compared to the cut of \$25,000,000 allowed under the House measure.

For two days the Senate played hide-and-seek with the automobile section. The Walsh amendment, which eliminated the entire tax on accessories, was defeated by a vote of 31 to 44, with 21 Senators not voting.

The next day the Walsh amendment was brought up by the Massachusetts Senator, being word for word the same amendment as was defeated the day before, and was adopted by a vote of 43 to 38, with 15 Senators not voting.

As the bill now stands adopted by the Senate, the automobile section, with the Walsh amendment in it, provides for a 3 per cent tax on automobile truck chassis and automobile wagon chassis sold or leased for an amount in excess of \$1,000 and automobile truck bodies and automobile wagon bodies sold or leased for an amount in excess of \$200 (including in both cases tires, inner tubes, parts and accessories sold in connection with the purchase); a tax of 5 per cent on automobile chassis and bodies and motorcycles, and a tax of 2½ per cent on tires and tubes. Parts and accessories and tractors are exempt under the Senate measure.

Just what the elimination of the accessories and parts tax will mean in dollars and cents has not as yet been determined, but in the discussion of his amendment Senator Walsh declared that it would not be more than \$5,000,000, "and will benefit, in a small measure, every automobile and truck user in the United States, as well as eliminate a great deal of overhead expense on the part of the Government and accessory and parts manufacturers" in making tax returns.

Senator Smoot, chairman of the Senate Finance Committee and "father" of the tax revenue bill, charged that it "might mean a saving of as much as \$21,000,000." Senator Walsh declared, in reply, that it could not be anywhere near that figure, as the estimated yield on tires, tubes and accessories was approximately that sum.

Summarizing very briefly the verbatim argument on the Walsh amendment, which was at first defeated, **AUTOMOTIVE INDUSTRIES** presents herewith to its readers the

While the Senate passed the Walsh amendment of the tax bill to eliminate the entire tax on automotive parts and accessories, that does not give positive assurance that it will become a law.

The bill still has to be passed upon by the Conference Committee, returned to the House and the Senate for a further vote, after which, should it be favorably voted upon by both bodies, it will go to the President.

first general debate and the first record vote taken by Congress on its attitude toward a general tax relief program of the automotive industry. In the House, it will be remembered, all debate was shut off, under the gag rule, after it had cut automobile taxes \$25,000,000. Senator Walsh, after nearly a dozen attempts, secured the floor and introduced his amendment:

"On page 195, in the section of the bill imposing excise taxes, I move to amend by striking out in line 19 all after the word 'tubes' down to and including the numeral '(2)' in line 20, the words proposed to be stricken out being 'parts, or accessories for any of the articles enumerated in subdivision (1) or (2).'"

Pertinent excerpts from the debate on the bill follow:

Mr. King (Utah)—That would result in the loss of \$21,000,000, would it not?

Mr. Smoot—Yes, \$21,000,000.

Mr. Walsh—I beg the Senators' pardon. Do not jump so quickly. I am not asking for the removal of the tax on all the commodities named in the section.

Mr. Smoot—I object. That provision has already been agreed to, but I think the Senator reserved the right to offer the amendment in the Senate.

Mr. Walsh—Yes. . . . Mr. President, the continuance of any of the war nuisance taxes is unwise. These taxes were levied under pressure of the war when increased revenue was needed and it was deemed unwise to place greater tax burdens upon those industries producing the absolute necessities of life. They are undeniably discriminatory because they fall only upon certain industries, but they are resorted to in an emergency. . . . Now that we are engaged in making already long-delayed tax reductions, should we not begin by repealing the discriminatory taxes on those industries that were singled out to pay special taxes over and above all general levies? . . . If I had my way and could see some way of raising the necessary revenue, I should like to remove all the tax levied upon automobiles, but such an idea is opposed largely because it has been a fruitful source of revenue.

We have removed the tax on some items considered as luxuries, but we have retained the tax upon the automobile of the clerks, salaried men, and the truck of the farmer. We have retained the tax on the parts sold by the garage and auto supply dealer to the owner.

Whatever may be said in favor of the tax upon pleasure automobiles and commercial motor vehicles, I do not be-

lieve that any sound argument can be made in favor of retaining a tax upon tires, tubes, parts and accessories to automobiles. I can understand how in desperation the Government may insist upon retaining its tax upon pleasure automobiles and perhaps upon commercial vehicles, but how it can justify a tax upon tires and tubes and parts is beyond my comprehension. Every owner of automobiles and trucks and every garage in the land protests this tax. . . . You might just as well put a tax on wagon wheels, rims, and wagon springs.

Tires and Tubes Would Pay the Revenue

It is estimated that \$21,000,000 would be raised by this paragraph as reported by the committee. How would that sum be raised? I call the attention of the junior Senator from Utah (Mr. King) to the situation. It would be raised largely through the tax upon tires and tubes. I have not asked to strike them out. I ought to move to strike out the whole paragraph, for it is an unfair tax.

Mr. King—Mr. President, will the Senator yield?

Mr. Walsh—Certainly.

Mr. King—In every argument that may be made by my able friend in favor of the removal of the excise taxes I heartily concur. . . . I offered an amendment proposing to take off the taxes from telephone messages and telegrams, and yet when I found that the tax raised more than \$34,000,000 and that we were striking off taxes from many other articles and that there was going to be a large deficit, I felt constrained to vote against my own amendment.

Mr. Walsh—I agree in part with what the Senator has said in so far as it applies to automobiles; but what can he say to a duplicate tax? It may be all right under present revenue conditions to put a tax upon a man when he buys his automobile or his truck; but when he goes back to buy tires and to buy tubes and to buy parts and to buy accessories—whatever that may mean—we are imposing upon him a duplicate tax, a nuisance tax, and a misfortune tax. . . .

Really a Duplicate Tax

I have not asked that the tax upon tires and tubes be removed, but I do ask that the tax be removed upon parts and accessories. What are parts? A spring, a light, a gage, a spark plug, a motor, a radiator. Anyone who has the misfortune to have to repair his machine, upon which he has paid a tax, must pay another tax.

Mr. Bayard—Mr. President—

Mr. Walsh—I yield to the Senator from Delaware.

Mr. Bayard—May I suggest to the Senator this thought? By reason of this tax the farmer in his penury is compelled to wear these parts to the uttermost limit, with the result that he himself and his family are continually in grave danger of life and limb because he cannot afford to renew the parts of his machine, largely on account of this tax.

Mr. Walsh—I thank the Senator for his suggestion. He is quite right about the matter, too.

Who pays this tax? The tax upon automobiles and upon parts is paid by the manufacturer in the first instance, but it is passed on to the assembly man, and the assembly man passes it on to the purchaser. When, however, we come to tires, tubes, and parts and accessories, the manufacturer pays the tax originally, but the jobber or the retailer has to pay that tax added to the price of his tubes and his tires and his parts, and the customer beyond him has to pay it, too, when it has been pyramided. It is absurd, it seems to me, to continue in this bill a provision for a tax upon parts and accessories. . . .

I am also informed that the amount of revenue which will be raised from parts and accessories will be very

limited, that it will be only a very small portion of the \$21,000,000, and that an exemption from the tax will save the automobile trade a great deal of expense and trouble and will certainly be of benefit to those who have to purchase the small parts which are used in repairing automobiles. . . .

It might be interesting in this connection for me to show that there is not any industry in the country paying higher taxes than the automobile industry, and I am sure the Senator from Michigan is well aware of that fact. . . .

If the Senator from Utah will agree to accept the amendment eliminating the tax on parts and accessories, I will not press my amendment to strike out the tax on tubes and tires.

Mr. Smoot—I wish that I could accept the amendment, but we have got to raise some revenue, and I know of no place where it can be raised better and the tax is imposed on those who can best afford to pay it. I shall want a vote on the amendment.

Asked if He Understands the Changes

Mr. Walsh—Does the Senator understand the purport of my amendment?

Mr. Smoot—Yes.

Mr. Walsh—Does he understand that I am only seeking to remove the tax on parts and accessories?

Mr. Smoot—Yes.

Mr. Walsh—And allowing the tax on tubes and tires to stay in the bill?

Mr. Smoot—I am perfectly willing to let them all go out, if the Senator desires to destroy the bill entirely. If there is no desire to raise revenue, let them go out hide, hair, and everything at once.

Mr. Walsh—There are some things left in the Senator's bill. Much that has gone out was discriminatory and not in the general public interest.

Mr. Smoot—There are very few, I will say to the Senator.

Mr. Walsh—This is a Government by majorities, fortunately. Tax bills cannot be made by any group of taxpayers.

Mr. Fletcher—Mr. President, may I inquire of the Senator how many income tax payers there are? The number is about 6,000,000, is it not?

Mr. Smoot—There are not that many now; the number is between 5,000,000 and 6,000,000.

Mr. Fletcher—There are between five and six million income tax payers, and there are about 14,000,000 automobiles.

Mr. Smoot—Fifteen million.

Mr. Walsh—Does the Senator from Utah agree that the tax imposed by this part of the clause raises comparatively little revenue, the principal revenue being derived from the tax on tires and tubes?

Smoot Agrees to Walsh's Statement

Mr. Smoot—The greater part of the revenue in this paragraph is from the tax on tires and tubes, but I wish to say to the Senator that there is more profit made in parts and accessories than there is in tires and tubes or any other article about an automobile. . . . I should like to accept the amendment of the Senator, but I cannot do so.

Mr. Walsh—Mr. President, we are ready for the question.

The Presiding Officer—The question is on agreeing to the amendment offered by the Senator from Massachusetts. [Putting the question.] By the sound the noes seem to have it.

Mr. Walsh—I ask for a division.

Mr. Smoot—Let us have the yeas and nays. Then we will know where the Senate stands. I want a record vote.

Mr. Walsh—Very well. Let us have the yeas and nays.

The yeas and nays were ordered, and the reading clerk proceeded to call the roll. The result was announced—yeas 31, nays 44.

The next day Senator Walsh again secured the floor and declared that he had been informed by a number of Senators who had voted the day previous that they "voted under a misapprehension," and again offered the same amendment.

The verbatim report of the second day's fight on the automobile tax section is as follows:

Mr. Walsh of Montana—Will the Senator explain the purport of the amendment?

Explains His Amendment

Mr. Walsh of Massachusetts—My amendment seeks to strike out that part of the tax of 2½ per cent that is proposed to be levied upon parts and accessories. It is a tax upon repairs that I seek to repeal. Perhaps every Senator here received through the mail a little automobile with a damaged wheel, attention being called to the fact that when a man breaks a wheel and goes to a garage to have a new part inserted, he has to pay a tax. It is bad enough to have to pay a tax on the original purchase of the automobile, but under this provision every time a man has to replace a part—a radiator, a spark plug, a nut, a screw, a bolt, a horn, or anything of that kind that is a part of an automobile—he has to pay an increased price for that part because it bears a tax. I do not know of any class of people upon whom it falls heavier than the farmer, who constantly has to be buying parts for his truck and farm motor vehicle.

Mr. Willis—Mr. President, will the Senator yield?

Mr. Walsh—I will yield in just a moment. The amount of the tax that would be removed by reason of the elimination of parts and accessories is comparatively small. The \$21,000,000 that we raised from the tax upon tires, inner tubes, parts and accessories chiefly and largely comes, as everybody can understand, from tires and tubes. The tax upon parts and accessories is a nuisance and replacement tax affecting 15,000,000 people in the country who have to buy parts to make necessary repairs. The amount of depreciation in our revenues if we remove this misfortune tax, in my opinion, will be comparatively small.

I now yield to the Senator from Ohio.

Questions Fairness of Exemption

Mr. Willis—As I understand the Senator's amendment, it proposes to exempt parts or accessories only from the tax.

Mr. Walsh—That is all.

Mr. Willis—Then I submit this question to the Senator: Upon what theory should parts or accessories be exempt from taxation if tires and inner tubes are not exempt? It seems to me they ought all to be taxed or none of them ought to be taxed.

Mr. Walsh—Personally, I would be glad to see the exemption carried so far as to remove tires and inner tubes from taxation; but tires and tubes are a source of a great deal of revenue, and it is comparatively easy for the manufacturer who sells to retailers and to local garages to keep a record of the tax upon tubes and tires. But the tax upon every little nut and bolt and screw and ring that goes into a car is simply a nuisance tax, not only on the manufacturer of parts but upon the little man that may be in a small way making a special part or parts for automobiles. . . .

That tax reaches out further and affects everybody who makes any kind of parts for a machine. Parts and accessories should not be taxed. It is bad enough to tax automobiles and trucks, tires and tubes, without levying a tax on every part that is required after the original purchase.

Mr. Smoot—Mr. President, I thought we went far enough in cutting off one-half of the tax in this paragraph. We took of \$21,000,000 from the other items in the existing law, but now we are asked to take out from this provision parts and accessories, the very things on which the highest profit is made. A man can buy parts and accessories for an automobile, we will say a Ford automobile, and if he buys them as individual parts and accessories and assembles them into a complete automobile, it would cost him as much as a Rolls-Royce would cost. Now, they are going to try to take the tax off of those parts and accessories, whereas the tires and tubes are sold on the basis of a comparatively small profit, but are not to be taken out. The parts and accessories, on which a profit of 200 and 300 per cent is made, are to escape taxation. I am ready to vote. I ask for the yeas and nays.

Mr. Walsh of Massachusetts—Let us have the yeas and nays.

The President (*pro tempore*)—The roll will be called on agreeing to the amendment to the amendment as in Committee of the Whole.

How Did Your Senator Vote?

The reading clerk proceeded to call the roll. The result was announced—yeas 43, nays 38, as follows:

YEAS—43

Adams	George	McKellar	Sheppard
Ashurst	Gerry	McNary	Shields
Bayard	Harrell	Mayfield	Shipstead
Brookhart	Harris	Moses	Simmons
Broussard	Harrison	Neely	Stephens
Bruce	Heffin	Norbeck	Trammell
Capper	Johnson, Calif.	Overman	Walsh, Mass.
Copeland	Johnson, Minn.	Pittman	Walsh, Mont.
Edge	Jones, N. Mex.	Ralston	Weller
Ferris	Kendrick	Ransdell	Wheeler
Frazier	Ladd	Robinson	

NAYS—38

Borah	Ernst	Lodge	Smoot
Brandeggee	Fernald	McKinley	Spencer
Bursum	Fess	McLean	Stanfield
Cameron	Glass	Norris	Sterling
Caraway	Gooding	Oddie	Wadsworth
Colt	Hale	Pepper	Warren
Cummins	Howell	Phipps	Watson
Curtis	Jones, Wash.	Reed, Mo.	Willis
Dial	Keyes	Reed, Pa.	
Dill	King	Smith	

NOT VOTING—15

Ball	Elkins	Lenroot	Stanley
Couzens	Fletcher	McCormick	Swanson
Dale	Greene	Owen	Underwood
Edwards	La Follette	Shortridge	

So the amendment of Mr. Walsh of Massachusetts to the amendment was agreed to.

The Presiding Officer—The question now is upon agreeing to the amendment as amended.

The amendment as amended was agreed to.

The general bill, with the Walsh amendment in it, was passed by the Senate and was sent to the conferees this week. Its position before the conferees is precarious, it is admitted, and what will be done to the automobile section is problematical.

Here and There in Foreign Markets

By special arrangement with the Automotive Division, Bureau of Foreign and Domestic Commerce

Australia Our Eighth Best Foreign Customer

AUSTRALIA, that island in the South Pacific which the average citizen is in the habit of associating with kangaroos, boomerangs and wild men, is at present one of our best foreign customers. Figures just released by the Far Eastern Division of the Department of Commerce show that it stands eighth on the list of all countries to which we export and that it is important from the American exporters' point of view.

During the nine months ended March 31, 1924, we exported to Australia goods valued at \$95,987,000, as compared with \$68,892,000 for the corresponding period of 1922-23. While this appears to be an extraordinary jump, it may be regarded as normal and an indication of what may be expected in our future trade relations with that area.

In 1923 we sold by far more automobiles to Australia than to any other foreign country, and in addition large quantities of all kinds of machinery, fats and oils, textiles, rubber goods and tires.

Latin American Trade Improving

TRADER of the United States with Latin America during March of this year shows a material improvement, according to a survey just announced by the U. S. Bureau of Foreign and Domestic Commerce. While the actual figures are not given, the survey states that automotive exports played an important part in the monetary value. The February exports were \$153,000,000, compared with \$183,000,000 in March. In March, 1923, the exports totaled \$197,000,000.

Imports from Latin America during March, 1924, were valued at \$122,569,447, compared with \$102,291,403 in February and \$136,472,261 in March, 1923. Commenting on automotive exports, the survey says:

"Important items in recent purchases from the United States into Argentina are in order named: Cotton textiles, hardware, and automotive equipment. . . . In Brazil the automotive market was better . . . The Chilean market for imported articles is in general dull, though several lines are moving satisfactorily, which includes the sale of automobiles. The market for trucks, however, is overstocked. Pneumatic tires were active in March. . . . Bolivia is buying increased quantities of American cars and trucks, but a decline in the agricultural prices has acted as a brake. . . . The market for imports in Venezuela was active during March, with automobiles and light trucks in good demand. . . . Mexican business conditions in general show an improvement. Rail communications in most sections have been reopened. Areas which have been practically isolated for three months have re-entered commer-

cial life and a noticeable increase of orders in many lines, including automotive products, has followed."

Germany Buying More American Cars

ALTHOUGH the heart of Germany—the unoccupied region—is still barred to American automobiles by rigid import restrictions, the outer edge of the country, as represented by the occupied territory, is buying American passenger cars in constantly increasing numbers, it has just been announced here by Percy Owen, Chief of the Automotive Division of the Department of Commerce. Mr. Owen says four times as many passenger cars were shipped into the occupied territory in Germany during March as during the entire year of 1923.

According to a compilation made by the Automotive Division, exports of passenger cars from the United States to Germany—occupied territory—in March, 1924, amounted to 234, as compared with total exports of 64 to the same region in all of 1923. Adding the exports during January and February of this year, which amounted to 41 and 163 respectively, the figures show that occupied Germany has bought 438 American passenger cars in the first three months of this year, almost seven times as many as in the twelve months of 1922.

South African Trade Almost Doubles

IN the Union of South Africa, automobile imports are steady, stocks normal, and the outlook promising; small sales of trucks and tractors are reported and the outlook is fair, according to cables received by the Department of Commerce.

According to the trade returns of the Union for 1923, motor car imports rose from less than a million pounds sterling to £1,750,000.

Races Determine Merit in Italy

SEVENTY-SEVEN competitions for motorcycles and motor-bicycles, extending from March to Nov. 23, with several races weekly, are scheduled in Italy during 1924, according to a cable from A. A. Osborne, Trade Commissioner, to the Automotive Division, U. S. Department of Commerce. "These events," he states, "are of great importance to local motorcyclists, dealers and manufacturers, as well as to American exporters of motorcycles in Italy, for racing success goes far to establish the merit of any machine with Italian users. The high esteem in which two heavy American machines are now held is due to their record of racing victories within the past few years."

New McCord Radiator Core Stamped from Ribbon Brass

Entire structure with integral fins is built up by means of progressive multiple die which forms tubes that project from strips running continuously through press. Tinned sections are stacked, forced together and baked to sweat all joints.

SIMPLICITY of construction and improved heat radiating properties are the outstanding features of a new type of radiator core which has been developed by the McCord Radiator & Manufacturing Company of Detroit. While the new core has the appearance of the fin and tube type, the tubes are formed integrally in sections which are punched from each lateral fin. The front view of each fin is illustrated by Fig. 1. At present the core is being made with four rows of tubes with each of the rows in line. It is also intended to build another type of core which will have but three rows of tubes.

As indicated by Fig. 1, conical projections are stamped out of each fin. These projections are spaced $\frac{5}{8}$ in. apart in both directions. The outside diameter at the base of the projection is approximately $\frac{9}{32}$ in. and at the outer end approximately $\frac{1}{4}$ in., while the total height from the surface of the fin is about $\frac{15}{64}$ in.

The combined fin and tube sections are made by a continuous process which involves a progressive multiple die. Ribbon brass stock of about 0.020 in. thickness and a width somewhat greater than that of the finished fin is fed from a roll into the front end of the die, which is set up in a continuous punch press.

In the first operation, rather shallow cups of a diameter much larger than that of the finished tubular section are formed. The metal in this cup section is then flowed lengthwise by successive operations until the projection reaches its normal height, at which point the end of the cup is punched out to form the tubular section. During this operation the fin is trimmed to its normal width, which allows $\frac{3}{8}$ in. from the centerline of the outer row of projections to the extreme edge.

As the material in the cups is flowed rather than stretched to form, the fins and tubular projections are both of the same thickness as the original ribbon. When

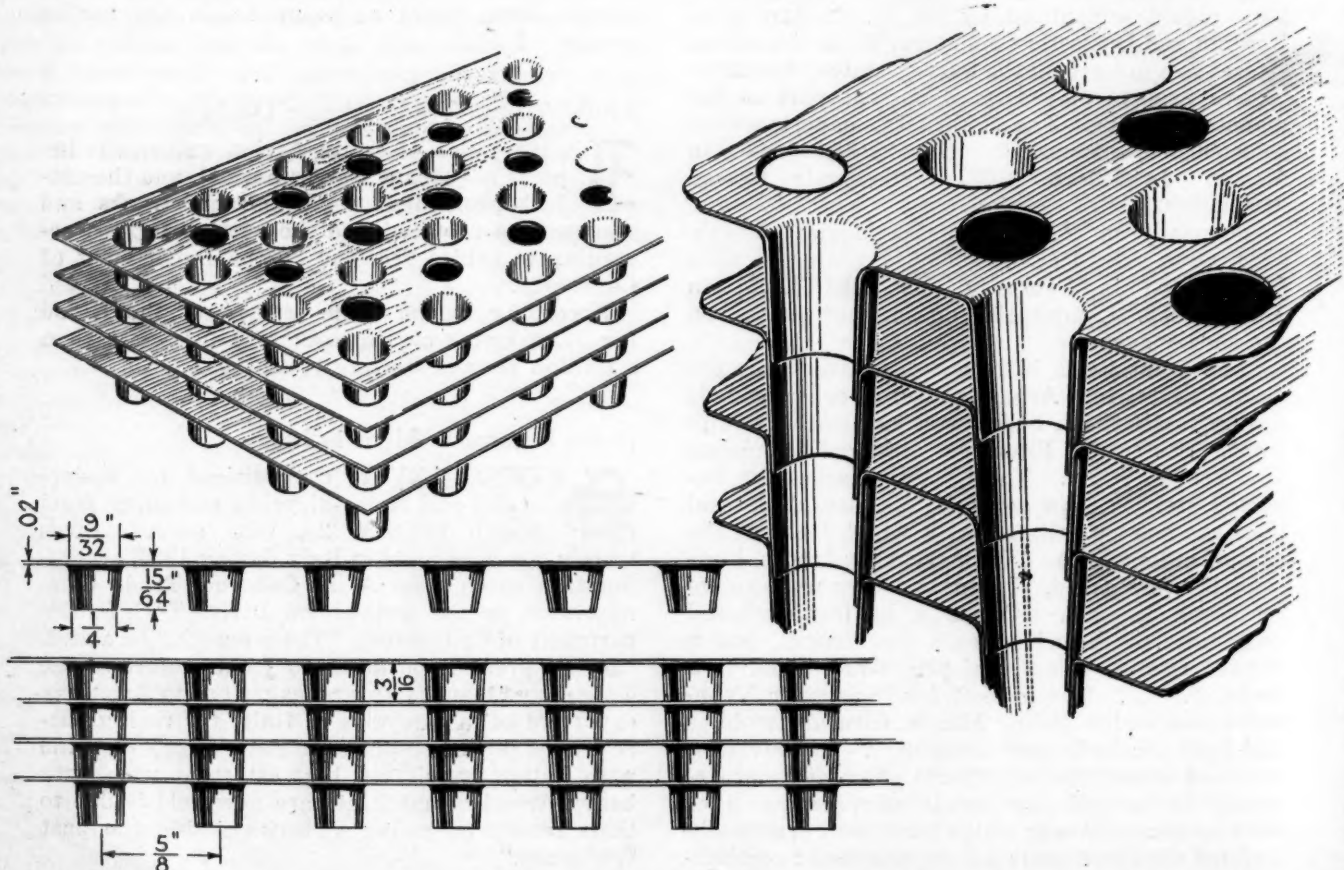


Fig. 1 (bottom)—Front row of integral fin and tube construction showing how each successive row of projections telescopes into next lower row. Fig. 2 and Fig. 3 (top)—Perspective view of a section of the core assembly

the finished fin strip leaves the press it is cut to lengths which are equal to the width of the core, care being taken to properly index the centerlines of the projections with each of the ends.

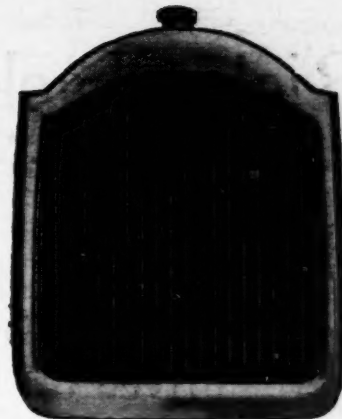
During the forming operation ventilation holes are also punched in the fin portions. These holes are approximately 5/16 in. in diameter and are centered at the intersection of lines drawn through each group of four projections. Experimental work has demonstrated that these ventilation holes materially increase the cooling efficiency of the core.

Following the operation of cutting to length, the fin sections pass over a solder bath with the projections downward. The bath is maintained at a depth which covers only the lower third of the projections. When dry, the fin sections are stacked in forms and pressed together so that the distance between the fins is uniformly 3/16 in.

The assembly then is placed in an oven and baked. In this operation the portions of the projections which have been dipped in the solder bath are sweated into the upper inside ends of the next lower projections. When this operation is completed the core is assembled with the tanks and the balance of the radiator in the usual way.

For a specified frontal area it is stated that this type of core is somewhat heavier than the standard fin and tube construction. This factor is more than offset, it is claimed, by the increased efficiency of the new type, which permits smaller frontal areas for the same cooling ability. Much of this increased efficiency is attrib-

How the new McCord core looks in a completed radiator



uted to the improved convection characteristics.

As any section of tube is integral with the portion of the cooling fin at its base, with no intervening joints of any kind, the transfer of heat from the water inside of the tubes to the air stream is said to be much more rapid than in conventional fin and tube construction. In addition to this feature the succession of tubular projection ends which are located in each full length of vertical tube tend to induce turbulence in the descending water stream and thereby bring the hottest portion of the stream into contact with the tube walls. Due to the stacked construction and relatively large sweated area at each joint, and the absence of long vertical lap joints, this construction is stated to be highly resistant to freezing action.

Recent Bureau of Standards Work Covers Wide Range

IN connection with the investigation which the Bureau of Standards is conducting on the effect of various quenching media used for the heat treatment of steel, ninety cooling curves were taken during the past month on steels varying from 0.25 to 1.25 per cent carbon with the object of studying the critical cooling rate to effect hardening. The apparatus used records the presence or absence of the normal, the lowered, and the "split" transformations on cooling at the cooling rates obtained in quenching.

Even at cooling rates in the neighborhood of 600 deg. Fahr. per sec., the apparatus records these transformations. Some of the results are at first sight anomalous and hardly in accord with the usual conception of what occurs during quenching. They appear, however, to be generally consistent with the super-cooling or "delayed crystallization" explanation given by Hallimond from the standpoint of physical chemistry.

It is believed that this work will point out that the hardness of steel by quenching follows the laws of physical chemistry and is not such a mysterious matter as is usually supposed. Many hardness tests and microscopic examinations will be required to round out this work.

SCIENTIFIC Paper No. 484 of the Bureau of Standards deals with the preparation and properties of pure iron alloys and specifically with the determination of the critical ranges of iron-carbon alloys by the thermo-electric method, the author being J. F. T. Berliner. Characteristic curves showing the changes in the thermo-electric properties of pure iron-carbon alloys are given for temperatures up to 1150 deg. C. The A_1 transformation was found to be constant at 768 deg. C. for heating and cooling in all alloys

having a carbon content up to 0.45 per cent, but it did not appear in higher carbon alloys. The characteristics of the curves obtained indicate that the A_1 transformation is of a different nature from the A_1 and A_2 transformations. The temperatures obtained for the three transformations are in fair agreement with those obtained by other methods. The upper end of the transformation is sharp, which is not the case when it is determined by other methods.

IN the study of paints for "weather tests," as applied to automobiles and other outdoor objects, the position in which a sample of paint is mounted for a weathering test has a considerable effect on the time required to make the test, the Bureau of Standards has just found.

Sunlight, according to the bureau, is the most important factor in the decay of paint exposed to the weather, and the maximum of sunlight in the United States can best be obtained by facing the sample south and inclining it at an angle of 45 deg. A vertical sample gets from 26 to 59 per cent less sunlight, and the time required for the test is correspondingly increased.

AT a recent meeting of the Gage Steel Committee of the Bureau of Standards it was reported that three threaded plug gages made of a steel and given a treatment selected by the committee, in a service test given them at the Frankford Arsenal had gaged 13,239, 13,796 and 27,035 pieces respectively, the first two being "go" gages and the last a "no go" gage. At the end of this test the gages had worn about one-half the amount permitted before scrapping. Ordinary commercial gages in similar service are said to gage about 5000 pieces before being worn out of tolerance.

Rickenbacker Incorporates Skinner Oil Rectifier in All New Models

Oil drawn from around the piston by inlet suction is subjected to a distillation process by the hot exhaust gases, fuel driven off being returned to the intake manifold.

NUMEROUS attempts have been made in the last few years to develop satisfactory methods of purifying the oil in automobile engines, so as to do away with the necessity for frequent changing of the oil. Two different methods of attack have been adopted, the first consisting in straining out the solid particles which find their way into the crankcase oil, and the second in distilling off the condensed fuel which works down past the pistons when the engine is run at low temperature or the choke is used unnecessarily.

The Rickenbacker Motor Co. is now equipping all its cars with the Skinner oil rectifying system, which operates on the distillation principle. Excess oil is drawn off the cylinder walls by vacuum and is passed through an exhaust-heated rectifier in which the fuel particles are distilled off and returned to the intake manifold, while the purified oil is returned to the crankcase. The oil rectifier embodies a thermostatic temperature control which prevents overheating of the oil. When the engine is started "cold" and until it attains the usual operating temperature the thermostatic valve remains closed, forcing the oil drawn into the rectifier to bypass and rise in the exhaust-heated drum until the exhaust temperature rises sufficiently to boil off the condensed fuel particles.

Crankcase Dilution Kept Below 10 Per Cent

As the distillation occurs under a partial vacuum, a temperature of 150 deg. Fahr. has been found sufficient to distill off all but the heaviest fuel fractions. Consequently, crankcase oil dilution is kept well below 10 per cent. Thus the oil is never so diluted, and its viscosity never becomes so low, as to reduce its lubricating qualities to the danger point.

Of course, if the engine is run only for short periods in very cold weather and not allowed to warm up to the temperature required for the proper operation of the oil rectifier, the oil will gradually become diluted. Under such conditions it is advisable to run the car, or let the engine run steadily, for about three or four hours at least once a week to enable the oil rectifier to restore the oil to its proper viscosity. The only other alternative would be to change the oil supply more frequently.

It is claimed that with the Skinner oil rectifying process it is not necessary to change the engine oil oftener than every 2500 miles under ordinary driving conditions. In numerous tests, covering a period of three years, cars with this equipment have been run tens of thousands of miles without changing the oil, merely adding to the supply to replace oil consumed, and no excess wear or other harmful results have been detected.

The oil rectifier proper is located close to the exhaust manifold, the upper part of the device being surrounded by a jacket through which part of the exhaust gases are

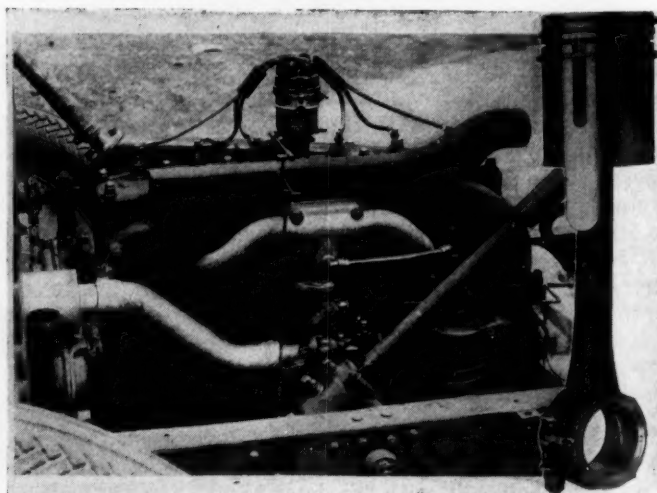
by-passed. A connection (O-F) from the intake manifold to the top of the rectifier supplies the suction or partial vacuum upon which the device depends for its operation.

A hole is drilled through each cylinder wall just below the lowest piston ring when the piston is at the bottom of its stroke, and a manifold or oil busbar C connects all six cylinder openings with the oil rectifier. An important feature of this equipment is that a small hole A is drilled through the wall of the piston in the bottom ring groove and diametrically opposite the oil hole in the cylinder wall. This allows oil or vapor from the crankcase to enter the ring groove from the inside of the piston, relieving the vacuum and allowing the excess oil to be drawn off the cylinder walls through the oil manifold.

Extension and Oil Hole Off Center

Each piston also has a vertical pocket or groove B which communicates with the lower ring groove and thus allows the suction to remove oil from the ring groove during about 120 deg. of the stroke. At the lower edge of the piston there is also a narrow vertical extension L to prevent the uncovering of the hole in the cylinder wall during the upper part of the stroke. This extension and the oil hole are located slightly off center, to make the connections of the oil busbar more accessible.

Oil and condensed fuel withdrawn from the cylinder walls enter the purifier at one side and gradually fill an



The above cut shows the Rickenbacker engine fitted with the Skinner oil rectifier. The inset on the right is an illustration of the piston and connecting rod assembly, showing vertical groove or recess to enable rectifier to remove oil and vapor from lower ring groove during a considerable portion of the stroke

annular space in the upper part of the device, the outer wall of which is in direct contact with the exhaust gases. As soon as the oil reaches a predetermined temperature the thermostatic valve H opens, allowing the oil to drain direct into the lower section of the rectifier. Excess oil in the upper section flows over a baffle wall into a central well and drains into the lower section through valves controlled by the float in the lower tank. It will be apparent, therefore, that until the proper temperature is reached some oil may be passed through the device without the fuel particles being distilled off, although they will be removed on the next circuit of the oil. Thus there is no possibility of any oil being drawn into the intake manifold through the suction pipe, even during the short period when the engine is warming up.

The thermostatic valve is a floating type, positively closed when the thermostat is cold, but free to open or close when hot. The thermostat is adjusted to open at the temperature at which condensed fuel will be distilled out of the oil. Of course, after the engine is warmed up the fuel particles removed from the cylinder walls are mostly in vapor form, being already vaporized by the heat of the piston. The fuel vapors are returned direct to the intake manifold through the suction pipe. Oil entering the rectifier when the engine is hot therefore drains direct into the lower tank of the rectifier through the thermostatic valve, which remains open except when the lower tank is draining.

Purified Oil Drains Back

The purified oil which accumulates in the lower tank of the rectifier is drained back into the crankcase periodically, being controlled by a float I and double valve mechanism G-Q. The vacuum is cut off from the lower tank only and air is admitted at atmospheric pressure when the float rises, the process being reversed when the float falls to its lower level. A check valve J in the lower outlet closes to seal the vacuum while the lower tank is filling up.

The device can handle a quart of oil every two minutes, giving it ample capacity for all driving conditions. Tests have shown that this capacity is ample to keep dilution down close to zero. Any water which accumulates in the oil is, of course, distilled off along with the condensed fuel particles and returned to the intake manifold in vapor form. Sulphurous acids, which also tend to accumulate in the oil, when an engine is run on present-day low-grade fuel, are similarly removed by the Skinner rectifier and returned to the combustion chambers, whence they are eventually removed with the exhaust gases.

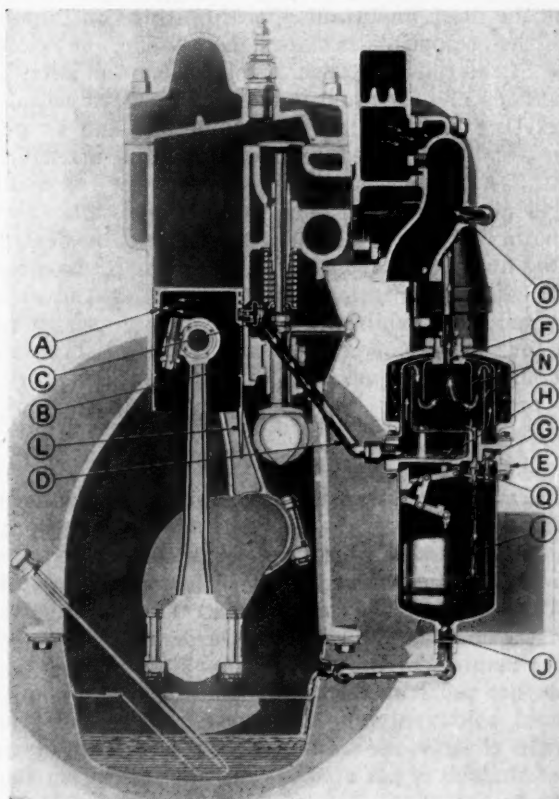
The rectifier operates automatically as long as the engine runs. The few moving parts are always immersed in oil, so there is but little possibility of the device getting out of order. In the remote event of a leaky float or other derangement the oil rectifier can be rendered inoperative by disconnecting the suction pipe at the intake manifold and plugging the hole in the latter. The engine would then operate just the same as any other engine not fitted with this equipment.

Located at Rear End of Exhaust Manifold

In the Rickenbacker installation the oil busbar or manifold is located inside the valve recess, back of the valve springs, with a single outlet connection in the rear wall of the valve enclosure. The rectifier is mounted under the rear end of the exhaust manifold and is set into a separate casting or heating drum which is located between the outlet of the manifold and the upper end of the exhaust pipe leading to the muffler.

A feature of this installation is that the crankcase breather has been eliminated. The Skinner system maintains a slight depression in the crankcase and it has been found that the breather is not required. This does away with any possibility of dust getting into the crankcase and contaminating the oil.

The only other possible causes of deterioration of the oil are core sand and metal particles which may be picked up during the early stages of the car's life, and the gradual "breaking down" of the oil due to heat. The first of these is guarded against by sand-blasting all unfinished interior surfaces during manufacture, by cleaning all parts during assembly, and by thoroughly cleaning out the interior of the engine after it has been block-tested and run in. The inner surfaces of the crankcase are painted with a special preparation which gives a smooth surface and does away with the possibility of metal particles becoming detached and getting into the oil. The gradual breaking down of the oil due to heat can only be compensated for, of course, by replacing the old oil with a fresh supply at stated intervals.



Phantom view of Rickenbacker-Skinner oil rectifier installed showing the Skinner oil rectifier on the Rickenbacker engine

A COOPERATIVE agreement has been arranged between the British Columbia Bureau of Mines and the United States Department of the Interior, whereby the North-West Experiment Station at Seattle will assist the first-named organization in establishing the best conditions for converting steel scrap, tin-plate scrap and spongy iron concentrates into foundry iron and steel, through the medium of the electric furnace. This work is a continuation of the laboratory work on synthetic iron previously done at Seattle by the Bureau of Mines. It is expected that the results will be applicable to the production of grey iron from spongy iron. The tests will include observations on the relation of charge to product, methods of controlling the composition of the product, power consumption, costs, etc.

Competition Makes Marketing Costs Range as High as 20 Per Cent

Analysis of distribution, including advertising, promotion and sales in terms of individual units, is as necessary as effective operation and saving in manufacture.

By Harry Tipper

STRESS was laid on the tendency to emphasize competition and the bearing which this had upon the cost of marketing in these columns some time ago. One of the most important effects of this constant attention to the competitor is shown in the somewhat close following of the same methods of marketing and particularly the methods of promotion outside of personal selling. -

Marketing channels are not numerous and in general the systems to be used in developing the market for a product are few indeed. It is necessary for the manufacturer to go direct to dealers, reach the retailer through distributor or jobber or other wholesaler, or deal direct with the final buyer, whoever he may be. It is necessary to use a sales organization as a rule, and to use advertising, sales promotion, exhibiting and other processes of propaganda for the development of the market. It is necessary to provide storage, methods of handling inventory and other processes for the physical distribution of the products.

Manner of Handling Affects Cost

All manufacturers must use some of these methods and the way in which they are used for any particular problem affects the cost of the business. The cost of distributing the product keeps on growing; it is more important in many cases than savings in manufacture and the effectiveness of the operation in each case varies much more widely than the manufacturing cost.

"I do not see how the small manufacturer in my field can live," said a big manufacturer. "He cannot manufacture as cheaply, nor buy as cheaply as we can by a good deal, so that he is not able to compete with us in the last analysis."

"Your manufacturing cost is not the whole thing," was the reply. "One of your small competitors turns over his capital three times to your once, his inventory is turned four times to your once, his advertising and sales cost together is considerably less than your sales cost alone, his cost of getting distribution is less per dealer, and consequently, even with his larger manufacturing cost, he is making a larger percentage on his capital than you are."

The problem is mainly one of distributing, including the sales and advertising, and of these the methods used in getting distribution and maintaining propaganda by advertising are the most important.

It is possible to operate with one salesman and cover only one small territory, it is possible to have one distributor; but it is not possible to so segregate advertising or sales promotion work.

A truck company making several thousand trucks exhibits at several shows during the year; the cost is 1/10

of 1 per cent of the gross income. Another truck company building only a few hundred, exhibits at the same shows and the cost to this company represents nearly 1 per cent of the gross income.

A company manufacturing over one hundred thousand cars per year advertises in a number of consumer media, including magazines and newspapers, but the cost shows less than \$1.00 per car. Another company attempting to reach the owner, but producing only a relatively small number of cars, spends \$20 per car to do the same work.

John Jones & Co. make a widely known accessory used all over the country; they carry branch stocks, most jobbers handle the line, and most retailers either stock the item or get it with ease. They advertise widely at a cost of 2 per cent of the gross sales. Smith & Co., makers of the same product in a much smaller way, attempted to promote their own business by the same methods of propaganda and found to their dismay that the cost was 20 per cent of the gross.

A similar situation develops in case after case; manufacturers whose problems are entirely different have attempted to work out their marketing program in the same way, using the same methods, without recognizing the fact that size, position in the field and previous development all alter the requirements of the marketing program and make the use of similar methods an absurdity.

It is true that all these methods have very simple objects in view and that these objects must be attained in a measure by all concerns in the field, but the methods to be employed in attaining the objects are as different as the methods of manufacture in plants varying greatly in capacity of product. A large part of this arises out of too much attention to successful competition and too little to the actual conditions and requirements of the market.

Branch Houses Versus Distributors

Equally large manufacturers have succeeded with totally different methods of marketing. Evidence of that sort can be found to support any plan of sales and advertising. Branch houses have succeeded in some cases and failed in others. Distributors have worked out well for some manufacturers and not so well for others. The same thing goes in every department devoted to the sale and distribution of the product. The relative value of any method of sales promotion varies with the character of the problem, and the methods employed by other concerns are of accessory value only, depending largely upon the detailed similarity of the problem with the one to be considered.

It is obvious, however, that the actual cost of the particular items in terms of individual unit, either of product

or prospect, has not been considered properly in its complete relation to the market, the relative capacity and the actual requirements of the individual manufacturer.

The car manufacturer who spent \$20 per car attempting the same methods of consumer advertising adopted by the manufacturer whose efforts cost him \$1 was burdening his product with an additional cost, which eliminated part of his competitive efficiency. The truck manufacturer who spent 1 per cent of his income trying to show as many exhibits as the manufacturer whose cost was 1/10 of 1 per cent was making it harder for himself in his future growth.

Too much attention to the competitive situation and not enough attention to the actual position of the company and its requirements is at the root of a good deal of this mistaken effort in the marketing field.

The engineer knows that, although the work done in other factories has a great bearing on his operations, the problem is not solved until the particular factory has been analyzed in the light of its own requirements. The marketing man must learn that his problem cannot be solved unless it is analyzed thoroughly in the light of its own peculiar and particular position, and the methods of promotion, distribution and sales adjusted to meet its requirements. This may be entirely different from those of the most effective competitors and outstanding successes in the same field.

The essential market for any manufacturer consists of those who can actually order and receive the products he makes in the territory he covers and his most economical market program is that which covers this essential market thoroughly in terms of his own capacity to produce.

Bear and Deere Tractors Pass Nebraska Agricultural College Tests

TWO more tractors have passed the official tests at the Agricultural College, Lincoln, Neb., a Bear Model B and a John Deere Model D, and from the certificates issued by the testing staff we abstract the following:

The Bear tractor, which was tested April 1 to 8, 1924, was equipped with a Bosch magneto, a Wheeler & Schebler 1¾-in. carbureter and wheel lugs of angle iron 1½ in. high and bent V shape.

In the brake horsepower tests this tractor developed 36.53 hp. at 1293 r.p.m. for a period of 2 hr., consuming 4.533 gal. of gasoline per hour or delivering 8.06 hp.-h. per gallon. The loss in cooling water was 0.179 gal. p. hr. In the maximum load test the engine developed 55.56 hp. at 1295 r.p.m. for a period of 1 hr., delivering 6.59 hp.-h. per gallon. In the half-load test the engine developed 18.86 hp. at 1299 r.p.m. for a period of 1 hr., delivering 5.58 hp.-h. per gal.

In the drawbar horsepower tests, the rated load test showed a drawbar pull of 2835 lb. at a speed of 3.68 m.p.h., corresponding to a drawbar horsepower of 27.79. The crankshaft speed in this test was 1285 r.p.m. and the slippage amounted to 2.91 per cent. Gasoline consumption was at the rate of 4.896 gal. per hour, corresponding to 5.49 hp.-h. per gallon. This test was run in second gear.

Made Three Maximum Load Trials

Three maximum load tests were run, in low, second and high gear respectively. In low gear the tractor developed a drawbar pull of 6805 lb. at a speed of 1.74 m.p.h., corresponding to a drawbar horsepower of 31.55; in second gear it developed a pull of 4863 lb. at a speed of 3.44 m.p.h., corresponding to 44.64 hp., and in high gear it developed 2708 lb. pull at 5.72 m.p.h., corresponding to 41.28 hp.

During the complete test, which extended over about 40 hr.'s running, 9½ gal. of Mobiloil B was used for the engine, of which 6 gal. was used to fill the crankcase and 3½ gal. was added later.

On April 3, before any official data were taken, it was found that the governor would not control the engine from rated load to no load with the carbureter set for best fuel economy. To correct this, the slot in the governor plunger was lengthened 3/32 in., this change being made standard for Nebraska.

The engine of this tractor is a Stearns four-cylinder of 4¾-in. bore and 6½-in. stroke, with a rated speed of 1290 r.p.m. It was fitted with a Duplex governor, Po-

mona air cleaner, Dow magnesium alloy pistons and Lynite aluminum alloy connecting rods. The tractor has three forward speeds, rated at 2.35, 3.80 and 6.15 m.p.h., respectively, and it weighs 7000 lb.

Exception is taken to the following passage in the advertising literature of the firm: "Bear tractors are operating 10 hr. per day under full drawbar load (which is greater than rated load of tractor) on 2.8 gal. of gasoline per hour."

Deere Has Two-Cylinder Engine

The Deere Model D is a 15-27 hp. tractor and has a two-cylinder horizontal engine of 6½-in. bore and 7-in. stroke, its rated speed being 800 r.p.m. This machine is manufactured by the Waterloo Gasoline Engine Co. and was equipped with a Dixie Aero magneto, a Schebler carbureter and spade type drop-forged wheel lugs 4 in. high. The tractor was tested April 11-17.

In the rated load test the engine developed 27.11 hp. at a speed of 803 r.p.m. for 2 hr. It consumed 3 gal. of kerosene per hour, which corresponds to 9.03 hp.-h. per gal. The water consumption was at the rate of 1.232 gal. per hour, this including the water fed with the mixture, which was taken from the radiator.

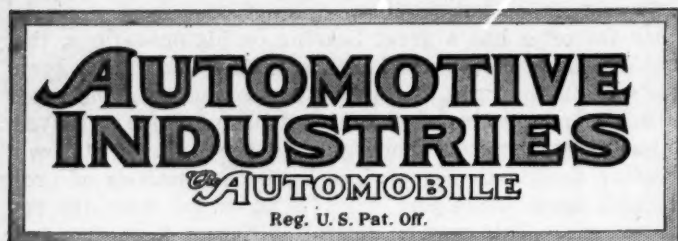
In the maximum load test the engine developed 30.40 hp. at a speed of 801 r.p.m. for a period of 1 hr., consuming 3.877 gal. of kerosene per hour, which corresponds to 7.84 hp.-h. per gallon. The water consumption in this test amounted to 2.791 gal. per hour. In the half-load test the engine developed 13.78 hp. at 809.0 r.p.m. for 1 hr., consuming kerosene at the rate of 1.838 gal. per hour, which corresponds to 7.5 hp.-h. per gallon.

In the rated load drawbar tests the tractor developed a drawbar pull of 1786 lb. at a speed of 3.52 m.p.h. in high gear, this corresponding to 16.75 hp. The fuel consumption was at the rate of 2.71 gal. of kerosene per hour, corresponding to 6.18 hp.-h. per gallon.

During the complete test of the tractor, including about 32 hr. of running, 2¾ gal. of Polarine XH (Extra Heavy) was used, of which 2 gal. was used to fill the crank case and ¾ gal. was added later.

During this test there were no adjustments or repairs necessary.

The engine of this tractor was equipped with the maker's own flyball type of governor and with a Donaldson air cleaner. Its rated speeds are 2.45 and 3.27 m.p.h. and its weight was 4260 lb.



JULIAN CHASE, Directing Editor NORMAN G. SHIDLE, Editor
D. G. O'CONNOR, Assistant Editor
P. M. HELDT, Engineering Editor HERBERT CHASE, Engineering Editor
J. E. SCHIFFER, Field Editor W. L. CARVER, Field Editor
C. G. SINSABAUGH, News Editor
WARREN BAKER, Ass't News Editor D. M. McDONALD, Detroit Representative

Home Office, 239 West 39th Street, New York City
Cable Address.....Autoland, New York
Telephone.....PENnsylvania 0080 New York

BRANCH OFFICES

Chicago—5 So. Wabash Ave., Phone Randolph 6960
Detroit—7338 Woodward Ave., Phone Empire 4890
Cleveland—538-540 Guardian Bldg., Phone Main 6432
Philadelphia—56th and Chestnut Sts., Phone Sherwood 1424
Indianapolis—1212 Merchants Bank Bldg., Phone Circle 8426

SUBSCRIPTION RATES

United States, Mexico and U. S. Possessions.....\$3.00 per year
Canada.....5.00 per year
All Other Countries in Postal Union.....6.00 per year
Single Copies.....35 cents

Entered as second-class matter January 2, 1903, at the post-office at New York, New York, under the Act of March 3, 1879.

Copyright 1924 by THE CLASS JOURNAL COMPANY

Member of the Audit Bureau of Circulations
Member, Associated Business Papers, Inc.

Automotive Industries—The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly), July, 1907.

THE CLASS JOURNAL COMPANY

U. P. C. Building, 239 West 39th Street, New York City

HORACE M. SWETLAND, President

C. A. MUSSELMAN A. B. SWETLAND
Vice-President and General Manager Vice-President and Manager
E. M. COREY, Treasurer W. I. RALPH, Vice-President
HARRY TIPPER, Secretary E. E. HAIGHT, Western Manager
Owned by United Publishers Corporation, 239 West 39th St., New York;
H. M. SWETLAND, President; CHARLES G. PHILLIPS, Vice-President; A. C. PEARSON, Treasurer; FRITZ J. FRANK, Secretary.

Ventilating Vehicular Tunnels

REPORTS of the trouble in the Pittsburgh vehicular tunnel last week indicate that the difficulty arose from lack of proper supervision rather than from any defect in the vehicular tunnel idea itself. While a number of persons were overcome by exhaust gas fumes in a traffic jam caused by a street car strike, it is probable that adequate policing could have prevented the entire occurrence. There wasn't a policeman in the entire stretch of tunnel, according to Clifford M. Holland, chief engineer in charge of construction of the New York tunnel, who investigated the Pittsburgh accident immediately after its occurrence.

It appears also from newspaper reports that Bureau of Mines investigations several months ago had indicated that the ventilation in the Pittsburgh tunnel would be insufficient in case of an emergency. Additional ventilating equipment was about to be installed.

The question of ventilation seems to have been considered as a primary problem in connection with the New York Hudson River tunnel, which is nearing

completion. Detailed tests made by the Bureau of Mines are being used as the basis for designing the ventilating equipment which will provide for a change of air in the tunnel forty times every hour.

Since the vehicular tunnel bids fair to aid materially in solving traffic problems in various places throughout the country, it is to be hoped that city officials will use every precaution in the future to assure their safety before they are thrown open to the public. It would be far better to keep a tunnel closed for a few months longer than might be absolutely necessary than to have a recurrence of the Pittsburgh incident.

Women as Traffic Investigators

ANOTHER powerful ally is ready to join the automotive industry in its campaign to reduce traffic accidents. The women of the nation have become intensely interested in this vital problem, which affects them and their children so closely.

When the national organization of women lawyers meets in Philadelphia next July, it will consider some method of traffic control by uniform laws throughout the country, and after deciding on a definite program will work vigorously for its adoption.

Any effort to secure uniform traffic laws is certain to have the support of automotive executives, provided a workable plan for standardization can be agreed upon. The desirability of being able to drive from one place to another without having to learn a multitude of new regulations is obvious, but to devise a scheme of control that has a real chance of universal adoption at present will be difficult. Eventually some such system seems likely to come, however, and the amount of study given the problem immediately will hasten its coming.

The lady lawyers are embarking upon a difficult but laudable task. They are going to work on a question that already has received a vast amount of attention from male experts and it is to be hoped that their deliberations will result in some new light on this important topic.

Will Drop-Base Rims Come?

A NUMBER of tire, rim and wheel makers, as well as car manufacturers, are known to be experimenting with wider drop-base rims for balloon tires, and some information which is available in this connection appears to be quite favorable to this type, although one of the large tire companies is known to be strongly opposed to it.

It remains to be seen whether experience with the drop-base rim will confirm its advantages and reveal no disadvantages of importance, and whether the advantages will be of sufficient moment to overcome the commercial inertia which a change of this character is certain to encounter for quite obvious economic reasons.

Apparently, British engineers are pretty well sold on the advantages of the drop-base rim, and also on a somewhat wider rim than now is used in this country. It is probable, however, that a drop-base rim

can be made without increasing rim widths beyond present standard dimensions, and also that if a wider rim is agreed upon as being more desirable it still will be possible to design it in such a way that present tires can be used with it and thus avoid new mold equipment.

Although a considerable number of users of balloon tires on present standard rims appear to think that these rims are wide enough, some tire and some automobile manufacturers are of the contrary opinion. One or two makers are reported to be about ready to adopt a 6-in. nominal width of rim, of the same size as that used with 6-in. truck pneumatics, which measures 4.33 in. between flanges, and employ thereon a 33 x 6.60 balloon tire.

The greater width of rim is said not only to increase stability, but also to give a carrying capacity equal to that of a 7.30 in. tire, because spreading the beads apart results in a wider tire section. In this case the tire is the same as 6.60 tires now used on narrower rims.

Some observers are not yet convinced that there is not danger of a deflated tire throwing off the rim if a drop-base is employed, especially if the casing is made without the special catch bead advocated by Dunlop. Some further experimental evidence along this line is being sought.

Standardize Stub Teeth

THE adoption by the American Gear Manufacturers Association of a new standard for stub teeth is of considerable interest to automobile designers, for the reason that stub teeth are used very extensively in automobile transmissions. This is evidently a field in which there was urgent need for standardization effort, for no less than nine systems (so-called shop standards in some cases) are in use at the present time. As the A. G. M. A. is one of the sponsors for gears of the American Engineering Standards Committee, the chances are that the newly adopted standard will soon be ratified by the latter organization, which will give it increased prestige.

There will be no important change in practice as regards the proportions of stub teeth, and gears cut in accordance with the newly adopted standard will mesh properly with those cut according to the two most widely used systems now in vogue. Hereafter there will be a definite proportion between any radial dimension of the tooth and any dimension transverse thereto, regardless of the pitch of the teeth. This will make the Lewis factors for gears of different numbers of teeth alike for gears of all pitches. In fact, these factors are already known, as one of the systems now in use is identical with the new standard and the manufacturers who introduced this system worked out the factors and published them. These factors may be found in the latest editions of some of the engineering handbooks. Double pitch numbers, such as 4-5, 6-8, 7-9, will be dispensed with, as a single number, together with the designation "standard stub," will suffice to fix the size and form of the teeth.

Gears have to be replaced occasionally, and the chief advantage of this new standard probably lies in

the fact that in the course of time it will make it easier to replace stub tooth gears. It will therefore save the gear user trouble and money, but the gear maker will also benefit in that it will enable him to get along with less equipment and in that it will generally simplify the problem of making replacement gears.

Congress Still Dodders

CONGRESS, as the world well knows, is still doddering along, considering intermittently, when it has a few minutes to spare from its real business of playing politics, the questions of taxation in which the business world is vitally interested.

Yet it is uncertainty about such questions as the tax bill and the soldier bonus which are primarily responsible for the industrial contraction which is now under way. Final passage of the bonus and a few other measures requiring large expenditures, over the President's veto, if he does veto them, would nullify all attempts at tax reduction, because the Government must find the funds to meet the obligations with which Congress burdens us. The tax reduction proposal was predicated upon the expectation that our national expenditures would not be increased.

Congress, theoretically, is representative of the people's wishes and responsive to their desires, but there is a vast gulf between theory and fact. Congress does not seem to be representative of anything unless it be politicians. Individual voters are not without recourse, however, because they have the power to determine the type of men who shall represent them at Washington.

How to Exasperate Owners

FEW things are more exasperating than to have your car "go dead" when you need it the worst way. We never heard of an owner who enjoyed driving in the rain, yet there are nearly as many cars used in wet as in dry weather. This is good evidence of the utility of a car. It's a necessity then to many users, and if it goes back upon them under such conditions and results in their getting a good wetting, it not only fails of its purpose of providing transportation without subjecting the user to needless exposure to the elements, but leaves him in no pleasant frame of mind toward the particular make of car which has refused to run when most needed.

The type of failure we have in mind is due almost entirely to a lack of suitable protection of ignition apparatus. Hoods which leak and distributors or other high tension parts which become wet in a driving rain are to blame in most instances.

It should not be a difficult matter to make a hood which will exclude water, or at least to place the ignition units in such position or under such suitable covers as will preclude their becoming wet.

A few experiences of getting stuck in the rain, especially when the car of necessity has been left out in a storm for a few hours, are enough to exasperate any owner and lead him to think twice before he buys another car which is given to such faults.

Higher Price Trend Predicted by Sloan

Believes That Tendency Will
Show Itself at End of Indus-
try's Fiscal Year

NEW YORK, May 13—Alfred P. Sloan, Jr., president of the General Motors Corp., believes prices of cars will advance around the first of July, the end of the fiscal year of the automotive industry, as indicated in a statement issued today.

"It is my opinion," says Mr. Sloan, "that such announcements as the automotive industry has been accustomed to make during the summer will this year indicate a higher trend of prices."

In making this significant statement, Mr. Sloan is credited by many with anticipating other big producers who during the last three months have been watching costs creep up and profits consequently drop, until now, even though the industry so far this year has manufactured more cars than in the same period last year, it is making only half as much per unit, as was the case during 1923.

Will Stimulate Business

It is figured that Mr. Sloan's statement, coming at the present time, not only will stimulate spring business but will also prepare the public for an advance in mid-summer. It is said, however, that while the majority of makers will probably increase their lists some price reductions may be looked for by companies with models that have not been moving fast; in fact, a sort of a housecleaning, as it were.

Mr. Sloan's statement was received as voicing the sentiments of the industry as a whole. His opening sentence carried much weight and he followed this up with his reasons for making the prediction. He said:

The question can best be understood by an analysis of what has taken place so far in the industry. Compare the price that is paid for a motor car today with that paid for the nearest comparable car six or seven years ago. In the case of a motor car a smaller number of actual dollars will purchase an immeasurably better article judged by any standard that may be set.

Prices in Line with Costs

The reason for this is that motor car manufacturers have reduced the price of cars in line with and frequently in advance of reduced costs made possible by better engineering and improved manufacturing methods. This has accelerated the natural increase in volume which in turn has made still lower costs and subsequently still lower selling prices. The manufacturer has been satisfied to take a lower profit per car which has been compensated for in some degree through increased turnover which, in turn, tends to equalize the return on capital employed.

(Continued on page 1100)

Business in Brief

NEW YORK, May 12—Too much politics at Washington and not enough attention given to enacting needed legislation are held responsible for much of the business hesitation still existing throughout the country. As soon as the tax bill is out of the way it is felt that the atmosphere will be considerably clarified.

Although a recession is noted in trade and industrial activity, the crop outlook is somewhat better than it has been, with winter wheat prospects excellent in the Southwest and good reports of a big yield emanating from Kansas. Bad weather in some sections and the work of farmers in connection with their crops in others have tended to limit buying in country districts.

Wheat prices have moved up and there has been a general strengthening in grain marketing conditions. The situation in cotton producing States is reported to be favorable.

There is an increase in unemployment, particularly in the textile and coal mining sections, greater inactivity among textile mills being evident. Slowing down in steel production from the March peak has affected coke purchases. Pig iron production is not keeping up with the pace of a year ago.

Building operations are keeping up well although in some places, notably New York, a recession is apparent. The lumber trade is quiet, prices showing a continued move downward. Quotations for a number of other materials, likewise, are on the down slant.

Car loadings for the week ended April 26 showed an increase over the preceding week but did not reach the figure for the corresponding week a year ago. For the entire year thus far only a slight gain is noted over the same period of 1923.

Says Ford Wants Shoals for Aluminum Production

WASHINGTON, May 14—The charge that Henry Ford's fertilizer proposal in connection with the leasing of Muscle Shoals was "only a smoke screen," and that the underlying principle behind his offer was the production of aluminum for automobile bodies, was made before the Agricultural Committee this week by Evangeline C. Hursen, representing the Illinois Public Ownership League, in voicing her opposition to either the leasing or selling of Muscle Shoals.

She declared that the Government should hold the property as a war plant and operate it for the benefit of the people.

Williams Is Elected Marmon President

Former Head of Wire Wheel Succeeds Walter C. Marmon, Who
Is Board Chairman

INDIANAPOLIS, May 15—George M. Williams, resigning as president of the Wire Wheel Corp. of America, of Buffalo, was today elected president of the Nordyke & Marmon Co., following his purchase of a substantial block of stock in the company manufacturing Marmon cars.

At the same time the directors elected Walter C. Marmon, retiring president, chairman of the board and re-elected all of the old officers, including Howard C. Marmon, vice-president and chief engineer.

Assumes Office at Once

Mr. Williams assumed office at once, at the same time announcing that a policy will be pursued that will be as aggressive as that of any other company manufacturing in the same class in the industry. He reports that the finances of the Marmon company are adequate for expansion in all lines contemplated, and he is well satisfied with the plant, which covers forty-five acres of floor space, of which practically two-thirds is new construction, equipped with modern production methods.

Marmon business has been particularly good this spring, and he starts off with a staff on its toes and with well-filled order books. Sales in April showed a 160 per cent increase over the same month a year ago, while so far this month business has been 185 per cent better than in May, 1923.

Walter Marmon will continue his activities in the company as chairman of the board and at the same time continue to handle other important interests, such as the Indianapolis Light & Heat Co. and the Noblesville Milling Co., in both of which he is the controlling feature.

As for years past, Howard Marmon will devote his main efforts to the engineering end of the business, so that while there is a new president, the Marmons will be as active as ever in the production of the Marmon car.

Retires as Wire Wheel Head

In accepting the new post, Mr. Williams retires as president of the Wire Wheel Corp. of America, which position he has held since last October, when he succeeded the late John F. Alvord. In that time Mr. Williams has brought the business of the company up to a point where in April it showed an increase of more than 300 per cent as compared with April of a year ago.

Before joining the Buffalo concern, Mr. Williams was for five years general manager of the Dayton-Wright division of General Motors and also interested in the export end. He also served a term

(Continued on page 1096)

British House Votes on Removal of Duty

Action by Commons Indicates
That Levy Imposed on Cars
Will Be Eliminated

LONDON, May 14, (by cable)—Action taken in the House of Commons, Monday night and again last night, presages the final abolition of the import duty on automobiles. The first step in this direction came Monday night when the House formally agreed to the budget resolution doing away with the McKenna duties. This was followed last night by a vote by the House rejecting the Conservative motion which declared it inexpedient to remove these duties.

This last is regarded as a test vote and makes almost certain the final abolition of the measure. Decisive action may be expected within the next two weeks, and it is expected that the ban will be lifted by Aug. 1.

Duty Is War Measure

This action will remove the 33 1/3 per cent import duty which was imposed as a war revenue measure and is favored, despite the protests of the British automobile industry, which predicts the ruin of the growing home motor trade. There are others, however, who do not hold this view, believing that the home industry is quite capable of reorganizing itself so as to bring its prices somewhere near a competitive level.

In fact, it is felt that British makers will meet the American prices when the pinch comes. Therefore, the American industry certainly must be prepared to make corresponding reductions if it is to secure any great increase of business over the \$4,000,000 per annum it enjoys at present in this territory.

The market quotations of British car concerns have not fallen materially on the stock exchange since the budget was first announced. Belsize, Austin, Humber, Napier and Rolls-Royce all have remained firm, while the others have dropped only a point or two. It would seem, therefore, that the panic engineered by the Protectionist press before the final action of the House of Commons was more apparent than real.

Would Prefer Different Plan

Representatives of American manufacturers in England would have been much more pleased if, instead of the removal of the 33 1/3 per cent duty, the present taxation of £1 per horsepower had been halved. American car prices, in spite of the import tax, always compared favorably with other foreign and home made articles in this market, and dealers in American cars would have benefited very materially if internal taxation had been reduced.

The American manufacturer must bear

Trailer Makers Should Carry Their Message Direct to Agents of Transportation

AN INTERVIEW WITH H. W. RAYMOND,
Sales Manager of the Lapeer Trailer Co.

By D. M. McDonald,
Detroit News Representative of the Class Journal Company

Detroit, May 14.

PRESENTING a pictorial exhibit of trailer operation at the convention of the National Retail Delivery Association, held here last week, H. W. Raymond, sales manager of the Lapeer Trailer Co., said the work of education in the possibilities of trailer use, is still one of the most important duties that falls to the trailer manufacturer.

By this Mr. Raymond meant the work of carrying the trailer message direct to the agent of transportation, in whatever industry or business he might be engaged. Though the trailer has established itself in practically all parts of the country as an essential in economic transportation, the field is still practically wide open for development, and Mr. Raymond views this as a call to progressive manufacturers to keep bringing their message home.

There is no longer any thought of development of trailer business injuring truck manufacturers, and early misunderstandings have given way long since, so much so that leading truck makers are now using trailers to fit in with demonstrations of effectiveness of motor transport. The truck, tractor and trailer are now considered as one group in outlining the possibilities of motor transportation in any business, said Mr. Raymond.

As reasons for the success of the trailer in achieving its position in the transportation field of today, Mr. Raymond emphasizes three points: Its saving of time in loading, saving of time in unloading, and the possibility of transporting heavy and bulky commodities in larger quantities. Where there is any work embodying these characteristics there is work for trailers. Manufacturers should continue to press these points home to insure the continuance of business growth.

Until the potentialities of trailers have become generally recognized, Mr. Raymond declares the merchandising effort must continue to be confined to trailer specialists. The business today is upon a specialized selling basis almost entirely, he said, for the reason that trailer manufacturers cannot feel assured that the average transportation user knows the trailer angle well enough to adopt it where practical.

The combination of truck and trailer selling through dealers will come into general practice later, said Mr. Raymond, though some steps are being taken in this direction at the present time. Until that time the trailer manufacturer must leave the way clear so that he may step into any territory and make direct selling effort to the prospective trailer user.

Aside from legislation in one State, there is little in the highway codes of any city or State to hinder the development of trailer business, Mr. Raymond said. Engineers have come to know that the division of load over three or four sets of wheels tends toward less destructive action while the reduction in speed incidental to combination truck trailer work also contributes to longer highway life.

in mind that the abolition of the McKenna duties will tend to benefit French, Belgian and Italian makers, as well as themselves. Makers in these countries have the advantage both of a depreciated exchange and the marketing of a small car. It must be remembered that British roads are among the best in the world, and the so-called colonial conditions, for which the high powered, roomy American vehicle is so fitted, do not, excepting perhaps in the Highlands and other remote spots, exist in Great Britain.

At present French exporters are in doubt as to what action to take, owing to the continued appreciation of the franc. If this currency maintains its upward tendency, it is probable that the drop in French prices will be comparatively insignificant when the duties are removed. This, of course, will benefit the American manufacturer, although André Citroen believes he will be able

to increase his imports from twenty to fifty cars daily and cut prices between 10 and 15 per cent.

The 11 1/9 per cent preference duty imposed on cars imported from the Canadian branch factories will lapse, which will bring the purely manufactured American automobile into competition with the Canadian built car so far as this market is concerned, but the latter will continue to enjoy the preferential duties now in force in Australia, South Africa and other units of the Empire.

The abolition of the duties in Great Britain and Ulster will not affect the Irish Free State. The Dail will continue to levy the 33 1/3 per cent import tax on cars and parts, independent of the action taken on this side of St. George's Channel.

British accessory makers seem to have a greater fear of France, now that the duty has been abolished. These fears

(Continued on page 1100)

Good Sales Reports Made to Producers

More Healthy Tone Given to Retail Business—Collections Are Satisfactory

NEW YORK, May 12—The April shower is over and automobile manufacturers have checked their umbrellas, satisfied that the business skies have cleared and that it will be "fair and warmer" for some little time to come. Production, it is evident, is on a pre-April basis, dealer stocks are moving with the advent of more seasonable weather, and there seems to be no reason for any further setback while the spring demand is on.

While it is yet too early in the month to predict the May output, it is apparent that the manufacturers have been so cheered by the reports from the field as to retail sales as to resume the even tenor of their ways, disturbed for the moment by the April slow-down in the plants. Cars are moving and, given a spell of good weather, dealers, their warehouses empty, ought soon to be clamoring for more.

Financially and otherwise, the industry never has been in better shape, say those who ought to know. Car builders are working in such close harmony with their distributors and dealers that the ebb and flow of demand can be sensed almost instantaneously and production increased or decreased as occasion demands. They have the situation well in hand and can cut their cloth accordingly.

Inventories Kept Down

Parts makers whose customers are the car manufacturers say that never have collections been better, which is a sure sign of the industry's prosperous condition. They report that their clients have profited by their lessons of 1921 and are keeping their inventories well down, as is illustrated in the case of the biggest producer in the world, who operates on an eight-day inventory. This might be expected to affect the business of the parts makers, but this is not so. The latter, knowing that all car builders are running with low inventories, can make their plans accordingly, which is a far better situation for the equipment people than having to run to capacity one month only to shut down the next because of the cancelled orders of their customers, making for a more even production.

The export situation looms more prominently than ever because of sev-

eral things—the action of Great Britain in deciding to remove the tariff, Germany's anticipated lifting of the embargo against the importation of cars, and the World Motor Transport Congress which is to be held in Detroit next week. This Congress will bring to this country automotive delegates from all over the world, all keen to learn about the American automobile industry and in many cases to arrange for the importation of American cars.

American manufacturers are aroused to export possibilities, as is evidenced by the significant statement of Alfred Reeves, general manager of the National Automobile Chamber of Commerce, who declares that the time is not far distant when at least 25 per cent of the American output will be exported, as against the 6 per cent of the present day.

Kokomo Company Buys Red Cap Shock Absorber

KOKOMO, IND., May 12—The Kokomo Automotive Manufacturing Co. of this city has purchased all basic patents involved in the manufacture of Red Cap shock absorbers from the Wellman-Wieber Checkers Co. of Cleveland. All factory equipment, finished and unfinished stock, etc., will be moved to the local plant, where production soon will be resumed in the enlarged factory of the new owners.

The Kokomo concern also is adding a Ford transmission lining of the same friction fabric as is employed in the Red Cap checker, to be known as Kokomo transmission lining. Sales will be handled by the Fulton Co. of Milwaukee.

Thompson to Make Valve for Replacement Field

CLEVELAND, May 12—The Thompson Silcrome valve, developed by the Steel Products Co. and introduced to the manufacturing trade about two years ago, will make its advent in the replacement field through the formation of Thompson Products, Inc., of this city, which will make the valve under a license which contains reservations intended to protect factories which buy from the licensors for original application.

Officers of Thompson Products, Inc., are: W. M. Albaugh, president; E. G. Thompson, vice-president, and K. L. Bracken, secretary and treasurer, all of whom have been associated with the Steel Products Co.

In addition to the silcrome valve, bolts, bushings, starting cranks and valves of other materials are being made by the new concern. The sale of these will not be confined to replacement, as in the case of the special valve, but will reach out into manufacturing branches of the industry.

More Ground Bought by Chicago Coliseum

Adjoins Present Building—Expected That Addition Will Be Ready for Next Show

CHICAGO, May 12—Owners of the Chicago Coliseum which has housed the annual Chicago automobile show since its inception, have purchased the land north of the present Coliseum on which has been located the old Grace Episcopal Church and will make every effort to have the proposed addition completed in time for the next national display of automotive products in this city next February.

This land is about 75 x 160 ft. and on it will be erected a three-story building which will be made a part of the present Coliseum. Two of these floors will be utilized for the automobile show and will make possible the housing of the entire show under the one roof, instead of utilizing the First Regiment Armory as has been done in the past. The two new floors will add 25,000 sq. ft. of space to what Show Manager S. A. Miles now has at his disposal in the present Coliseum.

Mr. Miles has been invited to attend a conference here for the purpose of discussing details of construction of the new building and will come on from Detroit next week, following the service show there. The Coliseum people say that it will be possible to put up the new building in time for the next national automobile show.

Will Give Up Armory

If it is found impossible to complete the new structure by that time, it is said that Mr. Miles is planning a most drastic step in giving up the First Regiment Armory anyway and housing the complete show in the present Coliseum and the Greer Building to the south.

There has been general complaint about the armory for years and it has been Mr. Miles' plan to abandon it altogether. The armory is detached from the Coliseum and is reached only by an alley, necessitating a disagreeable and cold walk to reach it. Exhibitors there are at a great disadvantage compared with their more fortunate fellow manufacturers in the big building.

Main Factory of Long Acquired by Luxor Cab

FRAMINGHAM, MASS., May 14—Guy Murchie, receiver for the R. H. Long Co., maker of the Bay State car, has been given authority by Judge Morton of the Federal court to sell the main factory of the company here to the Luxor Cab Manufacturing Corp. of Hagerstown, Md. The price is to be \$250,000. The Luxor company plans to build cabs in the plant, and open salesrooms in Boston shortly for the sale of its cabs.

April Output Mounts; Now Reaches 358,600

Revised Shipping Figures Change
Total from Original Estimate
of 337,000

NEW YORK, May 13—Revision of shipping figures has caused the National Automobile Chamber of Commerce to change its views as to April production of cars and trucks.

It finds that instead of 337,000, as was given out following the directors' meeting in Detroit, the total is approximately 358,600. This is 6 per cent below the 382,459 of March of this year and also 6 per cent under April of last year, when the count was 382,695.

This latest estimate is based on shipments of 49,400 carloads, as against 54,286 in March; 36,628 driveaways, as compared with 41,545 in the preceding month and 4056 boatloads as against 500.

For the first four months of 1924 the production totals 1,424,720, as compared with 1,258,198 in the same period of 1923.

Receiver Will Operate American Steam Truck

ELGIN, ILL., May 14—Clarke S. Reed, an attorney of Chicago, has been appointed receiver for the American Steam Truck Co. by Federal Judge Wilkerson. He was suggested by the stockholders at a mass meeting held here. It was voted to place the company upon an operating basis rather than go through a liquidation process.

The receiver will manage the interests of the company under the advisement of a stockholders' board, comprised of H. G. Wehrwein, Benjamin Doehrn, both of Chicago, and H. J. Muhr and J. F. Ryan, both of Elgin. The receiver at once took possession of the Elgin plant and met the stockholders' committee.

Judge Wilkerson stated that it was somewhat of an innovation to appoint a stockholder as receiver, but believed that the best interests of the concern demanded such action.

The stockholders appear to be anxious to have the plant continue in operation, having faith that ultimately it will prove profitable and realize something for the investors. They will cooperate with the receiver in creating such a condition.

GASES FILL TRAFFIC TUNNEL

PITTSBURGH, May 12—The local trolley strike caused a traffic jam Saturday in the twin Liberty tunnels through the South Hills, the tubes becoming choked with the gases from the exhausts of the motor vehicles. Scores of people

April Production Fell 6 Per Cent Below March and Also Declined from Total Reported for Same Month a Year Ago

NEW YORK, May 12—Revised shipping returns received by the National Automobile Chamber of Commerce indicate the production of 358,600 cars and trucks in April. This is a decrease of 6 per cent from March and 6 per cent under April, 1923.

The following table gives the statistics for the first four months of 1923 and 1924:

	Output		Carloads		Driveaways		Boat	
	1924	1923	1924	1923	1924	1923	1924	1923
January	316,152	243,539	46,559	35,223	40,976	30,031	1,018	728
February	367,469	276,934	49,219	36,165	48,300	43,613	1,100	882
March	382,459	355,030	54,286	44,983	41,545	62,988	500	1,908
April	358,600	382,695	49,400	46,095	36,628	60,467	4,056	5,027

Factory shipments and output for the other months of 1923 and 1922 follow:

	Output		Carloads		Driveaways		Boat	
	1923	1922	1923	1922	1923	1922	1923	1922
May	394,088	256,559	45,397	33,416	62,346	28,827	12,812	7,406
June	378,507	289,351	40,281	34,230	59,099	33,857	13,492	7,737
July	327,993	247,132	32,623	29,116	46,837	28,100	10,131	7,030
August	345,202	274,184	38,319	32,817	45,958	36,768	10,053	10,104
September	327,549	207,156	35,986	26,335	39,653	30,177	8,463	8,118
October	365,189	239,361	42,236	27,100	37,947	35,203	7,663	7,605
November	312,993	237,301	38,133	27,232	32,859	27,376	6,413	5,070
December	303,182	228,364	34,984	27,244	27,608	26,743	4,000	1,307

Motor vehicle production segregated as to cars and trucks is as follows:

	1923		1923		1924	
	Cars	Trucks	Cars	Trucks	Cars	Trucks
January	223,819	19,720	298,911	28,638	287,302	28,850
February	254,773	22,161	335,023	30,166	336,373	31,096
March	319,770	35,260	284,923	28,070	348,396	34,063
April	344,639	38,056	275,439	27,744	*322,800	*35,800
May	350,410	43,678				
June	337,362	41,145				
July	297,330	30,663				
August	314,373	30,829				

*Estimated.

were overcome and first-aid crews were called to rescue them. The tunnels form the main gateway into the city from five thickly populated suburbs.

Ansted Spring & Axle Co. Head Is Named Receiver

CONNEERSVILLE, IND., May 12—Earl M. Hunker, president of the Ansted Spring & Axle Co. of this city, has been named receiver for the concern as a result of suit brought by Robert H. Doepke of Cincinnati.

The receiver has been given full control, and it is understood that a plan to sell the assets is under consideration in order to pay the outstanding indebtedness.

According to the suit an issue of \$225,000 first mortgage bonds is secured by a first mortgage on the property and a note signed by Frank B. Ansted and Mr. Doepke. It is said no part of the note has been paid. The mortgage was executed Dec. 15, 1922, and the note became due June 15, 1923, the complaint states.

TRACTOR TRAIN NAME CHANGED

CONNEERSVILLE, IND., May 12—The Tractor Train Co. of Indiana will become the Lincoln Manufacturing Co. next fall in order to avoid any possible conflict of names. The company manufactures Moore transmissions and Lincoln brakes for Ford cars and trucks. The names of the products will not be changed.

No G. M. Car Units to Be Consolidated

NEW YORK, May 13—Rumors that have been current of possible eliminations or consolidations of units of the General Motors Corp. are effectually exploded by a statement authorized by President A. P. Sloan, Jr.

"There appears to be some misunderstanding regarding the purpose of General Motors in connection with its car divisions," President Sloan says. "Two or three years ago the corporation instituted a policy of realigning its car division products to the end that there would be available a car in each price class and that each car would be the best the resources of the corporation would make possible. It has naturally taken some little time to bring this policy into effect.

"It is not contemplated, however, to eliminate or consolidate any of the divisions now serving the public in this connection, but rather to strengthen and develop same, making such realignments in products as the development of the industry may justify. This is just as true with one division as it is another and includes Oakland, Oldsmobile, Buick, Chevrolet, Cadillac and GMC truck."

DETROIT WHEEL DISSOLVED

DETROIT, May 12—The Detroit Wire Wheel Corp. has been dissolved by the Wayne County Circuit Court and a receiver now is winding up its affairs.

Men of the Industry and What They Are Doing

Macauley Goes to Europe

Alvan Macauley, president of the Packard Motor Car Co., has sailed for Europe, to be gone until the middle of June. Prior to his departure he declared that sales are running ahead of production and that the outlook for the balance of the year is as good in the automobile business as in any line in the country. Because of muckraking at Washington, he said, business conditions have been unsettled to a certain extent and consequently he is not looking for 1924 to be as big a year for the automobile industry as was 1923.

Martell Gray Sales Manager

R. Martell has been made sales manager of the Gray Motor Co., succeeding W. M. Purves, resigned. Mr. Martell is a member of the original Gray organization and has served in a number of factory capacities, principally in connection with the sales department. He has spent much time in sales promotion work and recently has been assistant sales manager. He is in close touch with the sales situation about the country and is in a position to lend dealers valuable assistance.

Towers Heads Adcraft Club

W. K. Towers, advertising manager of the Paige-Detroit Motor Car Co., has been elected president of the Adcraft Club of Detroit. Other men well known in automotive circles placed on the board of directors are Frederick Dickinson, advertising manager of the Hupp Motor Car Corp.; R. C. Fowler, vice-president of Campbell-Trump Advertising Agency; B. G. Kroether, advisory staff of General Motors Corp., and Ward Marsh, president of McKinney, Marsh & Cushing, Inc., advertising agency.

Shields Is Motor Wheel Director

Edmund C. Shields, well known Lansing lawyer, has been elected a director and general counsel of the Motor Wheel Corp., succeeding the late Charles W. Nichols.

Hollmann Returns to Germany

Frederick Hollmann, president of the Hollmann Precision Ball Bearing Works, Wetzlar, Germany, who has been spending three weeks visiting American automotive factories, has returned to Germany after placing some orders for machine tools and making a thorough examination of the latest American machine tool practices. Mr. Hollmann states that the automotive business in Germany is picking up after having been very slack during the winter months. The German industry has not yet brought out any car that could be considered a rival of the Ford, a representative

small German car being the four-passenger Opel listing at \$1,500, United States currency. The Ford is being assembled in Germany by the Burg Iron Works, located near Berlin.

Rockwell Completes Trip

W. F. Rockwell, general manager of the Wisconsin Parts Co. of Oshkosh, Wis., has completed a business trip of about 12,000 miles, which started with the Boston show and covered the country from coast to coast and from Mexico to Canada. Mr. Rockwell was particularly impressed with the prosperity of the truck industry, declaring that the well financed companies are doing good business and expect to do better. He thinks the lower money rates will help truck sales. Buses and coaches are in increasing demand, he says, and there are six American manufacturers experimenting with six and eight-wheel chassis.

Joyce Executives Sail

Frank H. Joyce and William N. Joyce of the Joyce Manufacturing Co., Detroit, sailed on the S.S. "Paris" this week for France on a short vacation trip.

Fesler Severs Connections

Douglas F. Fesler has severed his connections with the Bassick Manufacturing Co. because of pressure of personal matters which long have been demanding his attention.

Fishburn Joins Murray Company

O. E. Fishburn, formerly experimental engineer with the Warner Gear Co., Muncie, Ind., has become affiliated with the J. W. Murray Manufacturing Co. of Detroit.

Perslon Export Sales Manager

David Perslon has been appointed export sales manager of the Stewart Motor Corp. For eight years he was in charge of the automotive department of the export house of Melchior, Armstrong, Dessau, Inc., of New York City.

Offer Submitted by Ford for Coal Dock at Duluth

COLUMBUS, OHIO, May 14—The Ford Motor Co. may acquire a well improved coal dock at Duluth if its offer of \$650,000 and the assumption of accrued unpaid taxes of \$8,000 for the dock properties of the Superior Coal & Dock Co., a subsidiary of the Maynard Coal Co. of Columbus, is accepted by Federal Judge J. E. Sator. The Maynard Coal Co. went into the hands of receivers several months ago.

The receivers secured the offer from the Ford company, and a meeting of creditors was called May 1 to consider

it. The creditors wished more time for considering the offer, with the result that the receivers will ask the court to decide the question.

The docks are extensive and are equipped with modern loading and unloading equipment, having a capacity of 8000 tons in twenty-four hours.

Earl Cooper Race Entry Bears Studebaker Name

INDIANAPOLIS, May 14—An eleventh hour surprise has been sprung by Earl Cooper, who announces that the unnamed car nominated by him for the 500-mile race will be known as the Studebaker Special.

The car has shown itself to be exceedingly fast in the time trials and it will be driven by Cooper, who is a veteran with a long record of victories in the past. He was a member of the old Stutz team, which campaigned so successfully on the speedways and in road races six or seven years ago.

Williams Is Elected President of Marmon

(Continued from page 1092)

as president of the Manufacturers Aircraft Association and as governor of the Aeronautical Chamber of Commerce of the United States.

Jackson Acting General Manager

BUFFALO, May 15—G. M. Williams, although retiring as president of the Wire Wheel Corp. of America, will remain as a member of the board of directors. H. G. Jackson, a vice-president who has been in charge of sales, has been named as acting general manager of the company.

New Balloons Announced by Goodrich and Miller

AKRON, May 14—Miller Rubber Co. and the B. F. Goodrich Co. have announced new balloon tires which can be applied on existing wheels and rims, following the announcement of the "Interchangeable" tire by the Goodyear Tire & Rubber Co. several weeks ago.

The three companies continue to produce balloons for the 20 and 21 in. wheel, but find the demand for the interchangeable tire much greater than for the smaller diameter.

A large portion of Goodyear's 6000 balloon tire production is of the interchangeable type. While accurate figures are not available, it is reported that Miller is making close to 2000 balloon tires a day. What the Goodrich balloon tire production figures are has not been intimated by the company.

G. M. C. Will Simplify Its Capital Account

**Plan Is Aimed to Make It Easier
for Investors to Value
Senior Securities**

NEW YORK, May 15—A recapitalization is planned by the General Motors Corp. which is designed to make it easier for the investing public to value more accurately the corporation's senior securities and which will reduce the number of common shares issued and outstanding from 20,646,397 to 5,161,600, besides capitalizing \$51,616,000 of the surplus account. With this end in view, a special meeting of stockholders has been called for June 16 at Wilmington to consider the plan as devised by John J. Raskob, chairman of the finance committee.

Exchange of Common Stock

That the proposed amendment to the charter will be adopted is not doubted by those familiar with General Motors affairs, following which holders of common stock can turn in four shares of the present common in return for one of the new series. In addition to this, the change will make it possible to consolidate the three senior securities into one, which will be the 7 per cent preferred. Holders of the 6 per cent preferred and 6 per cent debentures will have the right to exchange share for share on the payment of \$10 a share.

When this is accomplished and all stock exchanged, the capital structure will be:

7 per cent preferred stock (constituting a first charge on entire assets after debts of the corporation)	\$109,916,000
Common stock (5,161,600 shares of no par value capitalized at \$50 per share)	258,080,000
Surplus as of Feb. 29, 1924	80,667,000
Total capital and surplus	\$448,663,000

Mr. Raskob believes that this is a simple statement, easily understood, in which it is clearly shown that the \$109,916,000 7 per cent preferred stock to be issued is protected by upward of \$448,663,000 of net assets, representing a ratio of protection of better than four to one.

Raskob Outlines Plan

In a statement to stockholders Mr. Raskob says that the proposed amendments are designed to make possible the following plan and results:

First: The plan contemplates a new issue of no par value common stock, which will be exchanged for present common shares on the basis of one share of new for four shares of present common. This will reduce the number of shares issued and outstanding from 20,646,397, believed by many to be an unwieldy number, to 5,161,600 shares, and will capitalize \$51,616,000 of our surplus account, thus definitely fixing this additional amount of capital in the business as greater protection for our senior securities.

A comparison of our present and proposed common capital issue may be shown as follows:

	Common Shares Issued	Value Capitalized
At present	20,646,397	\$206,463,000
As proposed	5,161,600	\$258,080,000

Second: As at present capitalized we have three issues of senior securities, namely: 7 per cent debenture stock, 6 per cent debenture stock and 6 per cent preferred stock, all of which rank *pari passu*, that is, they enjoy the same preferences with respect to dividends and security. They differ somewhat in voting privileges and the 7 per cent debenture stock is subject to redemption at \$120 a share, while the 6 per cent debenture stock may be redeemed at \$115 a share and the 6 per cent preferred stock at \$110 a share.

In order to simplify this arrangement, the proposed plan will consolidate these three issues of senior securities into one issue of 7 per cent preferred stock (redeemable at \$215 a share) which stock shall enjoy a prior preference over all present issues on the entire assets after the debts of our corporation.

The holders of our present 6 per cent debenture and 6 per cent preferred stocks shall be given the right to exchange their stocks for this new 7 per cent preferred stock, share for share, on the payment of \$10 in cash. This results in an increased income of \$1 per annum on each share exchanged through the payment of \$10 and represents an income return of 10 per cent per annum on the amount of this payment.

Third: The 7 per cent preferred stock, herein referred to, is created through amending our charter to change the name of our present 7 per cent debenture stock to 7 per cent preferred stock.

Senior Security at \$125

This proposed new senior security, says Mr. Raskob, is redeemable at \$125 per share, carrying certain voting privileges and a prior preference over all other stocks of the corporation, with no mortgage or other fixed indebtedness of any kind ahead of it, except relatively small mortgages aggregating \$1,215,830, outstanding on properties purchased.

The capitalization of \$51,616,000 of the surplus account will be affected by the exchange of the present common for the new, capitalized at \$50 a share.

Overland Last Quarter Earned \$2,160,519 Net

TOLEDO, May 13—With sales for the first quarter in excess of those for the corresponding period in 1923, and with retail sales for the current quarter comfortably exceeding a year ago, when records were made, the Willys-Overland Co. today reported net earnings for the first three months amounting to \$2,160,519 after all interest and depreciation charges but before Federal taxes.

President John N. Willys told the stockholders at their annual meeting that every indication and report received by him warrants a feeling of confidence that a very active demand for automobiles will continue through the summer and fall months. The directors discussed back dividends on the preferred stock, but deferred action on resuming payments until a later meeting. All directors and officers were re-elected.

Order Is Withdrawn Covering Section 28

**Interstate Commerce Commission
Previously Had Set Effective
Date as June 20**

WASHINGTON, May 14—The Interstate Commerce Commission has vacated its order of March 11, placing Section 28—the preferential rail rate section—of the Merchant Marine Act of 1920 into operation on June 20.

This action follows the flood of protests which were recently voiced here by numerous national organizations, including the National Automobile Chamber of Commerce. Point was made by the representative of the latter organizations that movement of automobiles to foreign countries would be seriously crippled by the order.

Decided by Party Vote

Decision to vacate the order followed a party vote of 4 to 3, the Republicans voting aye and the Democrats voting nay.

Previous to the withdrawal of its certification, the Shipping Board by the same alignment voted down a resolution offered by Commissioner Thompson to modify the enforcement of Section 28 by excepting grain products, automobiles and meat products from its effect.

Explaining its action in withdrawing the certification of adequate shipping for the enforcement of the section, the board indicated an intention to revive the preferential rail rate question again after the first of the year. Commissioner Thompson, who has been pushing the fight for the enforcement of Section 28, suggested, however, that the board's action may forever prevent the establishment of American flag preference.

Political expediency is said to have been a controlling factor in the abandonment of Section 28 of the Merchant Marine Act by the Shipping Board. The belief is held here today that the board, in withdrawing its certification of an adequacy of shipping facilities from the Interstate Commerce Commission acted under virtually Administration orders.

General Study of Rail Rates

The Shipping Board itself has clearly indicated that other departments of the Government are to take a hand in the study of the preferential rail rate question and the problem of coordinating such a policy with transportation in general.

Thereby it is believed the board concedes that the control of the national shipping policies have passed from it to the committees of Government bonds, which is very similar to the suggestions made by Secretary Hoover to the joint Congressional committee on the reorganization of the Federal departments as the solution of the problem of an efficient shipping agency.

British Truck Allows 2 Driving Positions

Maudslay Introduces New Two-Ton Model with Optional Arrangements for Driver

LONDON, May 13 (*by mail*)—The Maudslay Motor Co., Coventry, England, one of the best known among British truck makers, has introduced a new model for two (long) ton net loads. Provision is made for attaching the steering column and controls in either of two positions. The first arrangement allows the driver to be seated normally behind the engine, while the second gives him a side-of-engine location and has the effect of increasing the available body space by 18 to 20 in.

With an overhead camshaft driven by bevel gearing at the front end, the engine features do not differ greatly from those of other Maudslay models. The camshaft, running in three bronze bearings located in a detachable full-length casing, operates the valves directly. Each cam applies to the closed end of a piston, the skirt of which extends downward for some distance around the valve spring and stem.

This piston is of hardened steel and reciprocates in a bored hole in the camshaft casing; no provision whatever is made for valve clearance adjustment, which is dependent upon the thickness of the crown of the pot in relation to the cam position and length of valve stem.

Gearset and wheel brakes are provided. The back axle casing is of the banjo type, forged from a steel billet, with worm gearing housed in a detachable unit. The wheelbase is 150 in. and track 66 in.

Olds Starts Shipping New Special Roadster

LANSING, May 14—Olds Motor Works is making shipments on a new sport roadster model, which brings the complete line up to eight body styles. The new special roadster, as it is called, is finished in weathered bronze color, part of the production being in color enamel and part in Duco finish. This model lists at \$885, f.o.b. factory, which is \$100 more than the standard roadster.

Equipment is very complete, including Tuarc disk wheels, nicked radiator shell, Moto-Meter with nicked bar cap, spotlight, front and rear bumpers, two running-board step plates, windshield cleaner, rear view mirror, windshield wings and protecting bars on the rear deck door. Upholstery is in brown imitation leather.

The new model will be produced in limited quantities, the majority of the roadster production being in the standard black enameled type.

PERFECTION TIRE BONDS

DAVENPORT, IOWA, May 13—Although Federal Judge Martin J. Wade

has allowed fees to receivers and attorneys in the Perfection Tire & Rubber Co. bankruptcy proceedings settlement, he has continued until next term the question of disposition of \$1,300,000 bonds of the defunct Ford Madison concern. Receiver of the plant and Charles W. Mills, Wilmington, Del., who bought the plant at sale, both claim the bonds. Paul S. Junkins was awarded \$18,000 receiver's fees and expenses after the court had slashed all bills in half.

Chevrolet Now Making New De Luxe Phaeton

DETROIT, May 14—Chevrolet Motor Co. is now in production of its new de luxe phaeton model, priced at \$625. Shipments are being apportioned to all dealers.

The new body is mounted on the regular standard chassis. Among the additional details are a special body finish by Fisher, gray whale grain upholstery with top lining to match, steel disk wheels finished to match the body, double bar spring bumpers front and rear, aluminum lock steering wheel, nicked radiator shell, Moto-Meter, with lock, cowl lights to match headlights, windshield wings, aluminum kick plates, special license plate brackets, metal inlay door handles, windshield wiper and Al-emite lubrication.

Brougham Sedan Model Being Made by Marmon

INDIANAPOLIS, May 14—A new four-passenger brougham sedan has been brought out by the Nordyke & Marmon Co. It is somewhat on the touring landau style, with an integral trunk support at the rear and with soft imitation collapsible rear quarter top with circular lights on the sides. The chassis is the standard 136 in. wheelbase on which the height of the floorboards above the ground is 24½ in.

The body is a four-door type, upholstered in taupe mohair or blue broadcloth. The car is furnished in standard or optional colors. The standard is coach blue medium on the lower panels of body and the hood. The chassis, fenders, radiator shell and upper panels of the body are black. The cars are designed to be roomy though compact. The rear seat width is 46 in. and the depth of the seat from front to rear is 19 in. Both the front and rear doors have openings 25½ in. wide. The locks are of the lever type and the regulators are the Ternstedt chain and sprocket design.

Without front wheel brakes the car is listed at \$3,985 f.o.b. factory. Front wheel brakes when installed at the factory before shipment are \$125 extra.

PREMIER CAB IN BOSTON

BOSTON, May 14—The Premier Cab Co. of Massachusetts has been formed to enter the taxicab business in Boston and has started with fifty cabs. Premier Motors of Indianapolis is back of the new company.

British Empire Show Has Few New Models

"Colonial" Type, Differing Little from Standard Car, Exhibited by Many Makers

LONDON, May 13 (*by mail*)—The English and Scottish motor industry is well represented at the British Empire Exhibition, now being held here. The exhibits occupy approximately 50,000 sq. ft. of space in a partitioned-off section of the Palace of Engineering. There are 122 exhibits of cars, trucks and motorcycles, space having been allotted to forty-seven car makers, twenty-three truck manufacturers, twenty-seven motorcycle firms, fourteen body-builders, two farm tractor makers, eight tire companies and 124 accessory and component firms.

Unlike those at the car show at Olympia, exhibitors have the right to change the displays at regular periods, if they wish to do so, before the exhibition closes in October next. At present open models predominate in the passenger car section, doubtless because the show is intended to appeal mainly to visitors from the British Empire overseas, where, it is considered, the demand for closed bodywork is relatively small. The open cars are very largely of the light car types, ranging from 10 hp. to 14 hp., although the makers of larger sizes and super-grade models—Rolls-Royce, Lanchester, Napier, etc.—are fully represented.

There is very little to be seen that indicates any departure from the practice current at Olympia last November. Two or three British firms show additional models for the first time, but these have no novel features of general interest or application. The only striking new exhibit is an Australian design, in which the combined body and frame is made entirely of plywood.

The car resembles a boat in general appearance, having a V front with no radiator in view. The four-cylinder engine is located centrally, inclosed by a

(Continued on page 1106)

Gardner Is Producing New Two-Door Coupe

ST. LOUIS, May 12—Gardner Motor Co. has started production on a new two-door, five-passenger coupe. This body is fitted to the standard Gardner chassis and is featured by two thin gold stripes just under the windows. The lower section of the windshield opens in and the upper section opens out. Additional ventilation is provided by a ventilator in the cowl.

The doors are 31½ in. wide and both front seats fold and tip forward. The interior is trimmed in velvet velour. A set of five balloon tires, 31 x 5¼ in., Tuarc steel disk wheels and Ross steering gear are extra equipment at an extra cost.

Olds Figures Dealer Capacity for Output

No Franchise Has Been Awarded Until It Is Assured He Will Make Profit

DETROIT, May 12—Olds Motor Works reports an increase in its number of regular dealers from 1296 to 2153 since the introduction of its 1924 models in October last year. Since October the number of new dealers added has averaged about 200 monthly. In addition to this number which includes only direct dealers there are approximately 500 sub-dealers and other sales connections, the company declares.

In working out its plans for extending its dealer organization, the company set up as a cardinal principle that no dealer franchise was to be given unless that dealer could be allotted enough cars and had the opportunity of selling a sufficient number to assure him a profit for the year. A dealer organization too large might make money for the factory one year, but would be a losing proposition eventually, the factory contends.

When the new dealer organization plan was worked out it was figured that 48 per cent of production would be sold by 20 per cent of the dealers, 26 per cent by 20 per cent, 13 per cent by another 20 per cent and that the remaining 13 per cent would be sold by the last 40 per cent of dealers. These tentative estimates were that 60 per cent of the dealer organization would absorb 87 per cent of the production.

Actual figures on April 15 showed that 60 per cent had taken 91 per cent of production, and available figures for the last half of April indicate this percentage will run between 88 and 89 per cent. The estimates were based upon actual past performances in the industry and are disclosed by the factory to indicate how accurately these may be worked out.

Government Completing Purchasing Agent Book

WASHINGTON, May 14—The approaching completion of the "Buyer's Bible," or handbook of specifications for the guidance of purchasing agents of the Government and of private industry, is announced by Dr. George K. Burgess, director of the Bureau of Standards, who explains the progress that has been made in the simplification of Government purchases.

In connection with the work, Dr. Burgess says:

The work of bringing together the existing specifications for such commodities as are purchased by Federal, State and municipal governments and public institutions is rapidly nearing completion. These specifications equal in number all of the specifications of the States and municipalities, and those of the national technical and trade societies combined.

How best to select the most satisfactory

specifications and bring them most promptly to the attention of the public purchasing agents is a problem the solution of which is now being given consideration by the representative Advisory Board. Upon the recommendations of this board will depend not only the scope of the handbook of specifications, but also the form and size of the publication which will have a determining influence upon the promptness with which the available satisfactory specifications can be made available to the public purchasers.

Finds Chemical Compound Does Not Absorb Poisons

PITTSBURGH, May 9—According to a report issued by the Bureau of Mines experiment station, tests of a certain compound, the trade name of which is not revealed, but which purports to reduce the liability of poisoning from carbon monoxide gas in garages, show that the compound does not absorb carbon monoxide from an atmosphere containing it, and that the spraying of the compound around a garage in the manner recommended by the manufacturer does not decrease the hazard of poisoning from the inhalation of exhaust gases from automobiles.

Developing New Compound

NEW YORK, May 13—According to newspaper reports in circulation here, a new chemical compound for adding to gasoline as a means for preventing carbon deposit and reduction of carbon monoxide in exhaust gas from automobile engines is being developed by Dr. Miller Reese Hutchinson. The nature of the compound is not revealed.

Morris Creates Record with 1000 Cars a Week

LONDON, May 3 (by mail)—For the first time on record a British car manufacturer has produced more than 1000 cars in a week. This was achieved by Morris Motors, Ltd., during the week extending from Monday morning, April 14, to Good Friday evening, April 18. Working three shifts of eight hours throughout the period, 1004 cars were completed.

Morris has recently been giving its views on the future of the motor industry and expressed the opinion that "Motoring in England has only just begun." The company considers that despite the larger population of the United States, Great Britain should be able to absorb as many cars, having the advantage of a complete network of made roads.

The "saturation point" is far distant, Morris considers, and having extended its own production plans from 20,000 last year to 50,000 this year, it is organizing now for an output averaging 1500 a week in 1925.

GERMAN SHOW IN FALL

BERLIN, May 2 (by mail)—Cars, trucks and motorcycles will be exhibited at an automobile show to be held in this city Sept. 26 to Oct. 5. Only German products will be displayed.

Rubber Restriction Sought by New Plan

British Considering Changing of Methods Following Failure of Stevenson Act

AKRON, May 13—New methods may be employed by the British government and rubber growers to bring about the results which were anticipated but did not materialize from the adoption of the Stevenson Act, according to a general interpretation of a portion of the speech of J. J. Broderick, counsellor to the British embassy at Washington, made to Akron rubber leaders and business men under the auspices of the Chamber of Commerce.

"As soon as estimates of the probable demand for crude rubber during the next five or six years have been worked out, we will know better what measures to take to protect the rubber growers," Mr. Broderick said.

Industry Here Interested

American manufacturers, he stated, are as keenly interested in protection of the growing industry as are the British, because this country uses 75 per cent of the product of the rubber plantations. He declared that the restriction policy or any other policy looking toward increased prices and profits of the crude rubber growing industry was intended only as a means of protecting the future supply of the product.

The rubber industry has heard reports from the British Empire and colonial possessions in which new plans to increase crude prices have been discussed, but the statement by Mr. Broderick was the first official information the industry has been given regarding new plans to replace the Stevenson Act which became operative a little more than a year ago.

The price of crude rubber has dropped since the Stevenson restrictions have been effective and prices at the present time are at least 10 cents a pound lower than a year ago.

Ambassador Speaks

Sir Esme Howard, British Ambassador to the United States, who also spoke, dwelt only slightly upon the international rubber relations and confined himself to discussing wider problems and to narrating his personal experiences as a rubber planter which he said "had been mostly characterized by failure to make money."

One of the interesting side lights connected with the visit of the British party to Akron was the fact that Harvey S. Firestone, president of the Firestone Tire & Rubber Co., who has been the most bitter opponent of the British restriction policy was the chief entertainer of the group and had invited the rubber men of the Akron district to meet the ambassador informally.

Throughout this informal meeting there was no indication that the ambassador

(Continued on page 1105)

Gray Factory to Get Names of Prospects

Five Weeks' Campaign to Help
Dealers Will Be Staged in
Detroit District

DETROIT, May 14—The Gray Motor Co. has undertaken to dig up prospects for its dealers and is initiating a campaign in this section, which, if satisfactory, will be carried to every territory in the United States. The campaign here will continue for five weeks, during which time it is planned to give 4000 demonstrations of the Gray car. From these demonstrations the company has set a figure of 400 sales which it expects to realize.

The campaign here covers all the territory in the Detroit distributing district, which comprises about one-half the State. Through its advertising manager, Rex Glassen, the company will undertake to deliver the names of at least 4000 persons interested in demonstration of the Gray car. These will be apportioned to the district dealers in which the prospects live. Definite appointments for the demonstrations will be made, and salesmen will be required to make detailed reports of the result of their demonstration to the dealer. These in turn will be reported to the factory, which will check back through a follow-up campaign.

Salesmen will make direct sales effort during the demonstration, but the main point in the campaign will be to get prospects interested in the Gray product. The company has evolved two methods of discovering prospects, the forms of which are new. One of these is through a school essay campaign, the other an approach to owners of selected vehicles in the low priced lines.

In going into this work, The Gray Motor Co. is prepared to continue its factory effort toward supplying live prospects to its dealers permanently. If the present plans work out, lack of dealer initiative in reaching prospects can be met by factory effort, the company believes, and the spreading of knowledge of the car through demonstrations will result in largely improved sales conditions.

British House Votes on Removal of Duty

(Continued from page 1093)

duty have been abolished. These fears are based on comparative proximity, cheaper labor and depreciated exchange. Nevertheless, American parts and accessory makers will have a distinct opportunity of increasing their sales.

Price Reduction Reported

NEW YORK, May 15—A dispatch from London to the New York World announces that "agents of American cars in the United Kingdom today re-

duced the price of their cars 20 per cent in anticipation of the removal Aug. 1 of the wartime duties."

While this action had been anticipated, the identity of the concerns making the reductions is not known here. The General Motors Export Co. states that it has not been advised of any such reduction.

It has not adopted any definite policy as to the present situation, as even with the tax removed, it will make a difference of only 10 or 15 per cent in its sales because of the company having plants in Canada and England. It expects that sales may suffer somewhat between now and Aug. 1, when the duty will be lifted, but otherwise the situation is not worrying the executives.

Durant Motors has a direct representative in England, but as yet has not been advised of any price reduction.

Bondholders Will Buy Mercer Motors Plant

TRENTON, N. J., May 15—Referee Samuel D. Oliphant has approved the offer of John L. Kuser and William L. Kinney of New York, representing bondholders of the bankrupt Mercer Motors Co. of this city, who have expressed their willingness to pay \$100 for the Mercer plant, subject to the mortgage of \$450,000 held by Kuser, Kinney and the other bondholders.

All liens and encumbrances have been assumed by the new owners.

Moto-Meter Co. Winner of Two Court Decisions

NEW YORK, May 14—The Moto-Meter Co. of this city has won two court decisions upholding the validity of the Boyce patents and ordering the defendants to cease manufacturing devices which infringe.

The United States District Court of the District of New Jersey handed down the decision in the case against the Superior Brass Manufacturing Co. of Paterson, N. J., against which a preliminary injunction was granted a year ago. Judge Charles F. Lynch, in granting the final decree making the injunction permanent, ordered the defendant to pay the costs.

Judge F. A. Geiger of the United States District Court, Eastern District of Wisconsin, settled the other suit, that against the Sunbeam Co., Inc., of Milwaukee, granting a permanent injunction, the suit not being contested and the decree being entered by agreement.

Sunbeam Reorganizes

MILWAUKEE, May 12—Following the decision in favor of the Moto-Meter Co., the Sunbeam Co., Inc., has reorganized under the name of the Nuway Co., Inc., with a capital of \$10,000, to manufacture an electrical temperature meter. It also is making the Nuway Universal lock caps. The officers of the new company are: W. M. Baumheckel, president; L. C. Scharnhorst, vice-president, and G. E. Pieper, secretary and treasurer.

Higher Price Trend Predicted by Sloan

Believes That Tendency Will
Show Itself at End of Indus-
try's Fiscal Year

(Continued from page 1092)

While additional economies will always be possible, there are compensating factors which must be given consideration, especially the increased cost of distribution. An adjustment, therefore, must be reached sooner or later. This will come about when the curve of expansion flattens out.

It is improbable that the consumption of motor cars this year will be any greater than last year. I believe that prices made last year discounted to some extent what was believed to be a still expanding volume. This is evidenced by the fact that several manufacturers already have advanced prices during the past few months.

I believe the pendulum has swung too far and a reaction is certain to come until the situation is equalized.

Industry Sees Adjustment Coming

DETROIT, May 14—A summary of the attitude of the industry toward prices indicates a growing general belief that the last two quarters of the year will show prices adjusted on a higher basis because of reduced production schedules.

Without definitely committing themselves, manufacturers give the impression that output for the latter part of the year will be so much under early year schedules that higher prices must be fixed to fit the adjusted basis of operation.

This attitude for the present is confined for the most part to manufacturers producing cars in the \$1,200-\$1,500 price class. Makers in lines up to the \$1,000 class look for buying to be better sustained, with consequent lesser effect on schedules. Business in the higher priced lines is not expected to show severe curtailment.

Manufacturers, in stating their opinions of the necessity for readjustments in schedules and prices, take the stand that continuance of present prices would not keep business totals high enough to be profitable. Their feeling is that business will be slow regardless of prices, and for that reason prices must be fixed at a point to make whatever business there is worth while. This condition may be expected to continue through the balance of the year, they declare.

These increased prices will not be confined to new models making their appearance but will apply also on continuing lines. They will not be influenced by balloon tires or any changes in equipment but will be due entirely to readjustment schedules.

COUZENS CONVALESCENT

WASHINGTON, May 15 — Senator James Couzens of Michigan, who was recently operated on in Baltimore, is declared convalescent, and will resume his activities in the Senate investigation of the Internal Revenue Bureau.

Detroit Stage Ready for Week of Events

Six Days of Activity in Store with Holding of Show, Convention and Congress

DETROIT, May 15—Next week will be a red letter six days of unusual activity for the automobile industry, beginning with the service convention and show, which will overlap with the World Motor Transport Congress.

The service men will open their sessions on Monday and continue them until Thursday, while the transport congress begins on Wednesday and continues until Saturday night. By this arrangement the 100 and more delegates to the congress will be able to study American service methods in a most comprehensive manner.

Arrangements Completed

All arrangements have been completed for both events. As arranged, the service convention will begin on Monday afternoon and in the evening the show will open. On Tuesday, Wednesday and Thursday the show will be open morning and evening, with the convention in session each afternoon.

At each of the afternoon sessions there will be papers and discussions on service subjects, the card as arranged by F. A. Bonham, chairman of the Service Committee of the National Automobile Chamber of Commerce, including the following:

C. A. Vane, general manager of the National Automobile Dealers Association; J. C. Wright, director of the Federal Board for Vocational Education; E. M. Young, advisory staff, General Motors; D. Andrews, service manager, Continental Motors Corp.; H. W. Alden, chairman of the board, Timken-Detroit Axle Co.; F. C. Stanley, chief engineer, Raybestos Co.

Thomas J. Little, chief engineer, Lincoln Motor Division, Ford Motor Co.; L. A. Danse, chief metallurgist, Cadillac Motor Car Co.; Dr. W. K. Lewis, Massachusetts Institute of Technology; Carl H. Page, director of sales, Durant Motors of New Jersey; W. G. Eben, Comfort Specialty Printing Co. and G. R. Fessenden, service engineer, North East Electric Co.

Miles to Direct Show

The service equipment show will be held in the General Motors Building under the direction of S. A. Miles. More than 100 exhibitors have taken space.

John N. Willys, chairman of the Foreign Trade Committee of the National Automobile Chamber of Commerce, is in charge of the World Motor Transport Congress, which will be held at the Hotel Statler May 21-24. Mr. Willys outlines the three main purposes of the congress as follows:

1. To learn from the delegates from abroad a fuller understanding of motor transportation needs and opportunities in foreign countries.

2. To give the rest of the world a demonstration of the development of transportation in this country, together with knowledge of the factors which have made this growth possible.

3. To promote friendly international trade relations through the cordiality of personal acquaintance.

Speakers listed for the congress include among others:

Sir Henry Thornton, chairman of the board and president of the Canadian National Railways; W. Herman Slade, president of Slade, Allen & Co., Sydney, Australia; T. R. Dahl, vice-president of the White Motor Co.; Alvan Macauley, president of the Packard Motor Car Co.; Myron E. Forbes, president of the Pierce-Arrow Motor Car Co.; John Hertz, president of the Yellow Cab Manufacturing Co.

F. J. Haynes, president of Dodge Brothers; E. S. Jordan, president of the Jordan Motor Car Co.; F. F. Fairman of the American Chamber of Commerce in Shanghai, China; Paul Cousin of the Motor and Accessory Dealers Chamber of Commerce, Bruxelles, Belgium; H. H. Rice, president of the Cadillac Motor Car Co.; J. Walter Drake, assistant secretary of the United States Department of Commerce and Ludwig Buckremer, president of the German Automobile Dealers Association.

Inspection tours of Wayne County roads, special luncheons each day in honor of the visitors and a banquet will fill out a busy week end.

New Falls Eight-in-Line Is Placed in Production

CHICAGO, May 13—Falls Motor Corp., Sheboygan Falls, Wis., is now in production on an eight-in-line overhead valve engine, samples of which are in the hands of several manufacturers. The engine is 3½ in. bore by 4½ in. stroke with 74 lb. gage compression. It develops 61 hp. at 3000 r.p.m. The engine is for three-point suspension, designed as part of the unit power plant to take No. 3 or 4 bellhousing.

The crankshaft is arranged to give complete inherent balance of inertia forces. The cylinders are block cast with the upper half of the crankcase integral with the block.

The cylinder head is detachable and contains the intake manifold. Lubrication is by force feed with return flow to cam faces through valve push rods. Cooling is by pump or thermo-syphon, optionally. The crankshaft has five bearings of 2¼ in. diameter. The pistons are cast iron and the valves are silchrome. The engine weighs 650 lb. and is 46 9/16 in. long overall. The block is 36¾ in. long.

HUNGARY MAY INCREASE DUTY

WASHINGTON, May 13—A bill has been introduced in the Hungarian National Assembly imposing very greatly increased duties on imported tractors, light and medium weight automobiles and tires, according to a cablegram received from Consul General George Horton in Budapest by the Bureau of Foreign and Domestic Commerce.

Tire Makers Follow Curtailed Schedules

Is Only Seasonal Let-up, However —Output Will Fall Below 100,000 a Day Mark

AKRON, May 14—The long expected reduction in tire production has set in, according to leaders in the industry, although as yet the larger producers will make no statement regarding revised production schedules.

The reduction is entirely seasonal, however, and is generally characterized as being without any causes for alarm, although large stocks of completed tires, locked in warehouses by adverse weather conditions coupled with decreased production on the part of some of the tire makers has made the reductions come somewhat early this year.

Changes in schedules are accompanied by gradual reductions in personnel in various departments, while third shifts are being taken off in some of the plants. The reductions, however, are not imposing any hardships on the unskilled labor because the men as they lose their positions in the rubber works have no difficulty in finding employment elsewhere.

The rubber industry is not yet so far removed from the period when it recruited its help from the farms during the winter season and returned it to the plow and the harrow in the spring that the seasonal fluctuations work hardships upon its employees.

It is estimated that within the next week or so the production schedule of the district will be somewhat below the 100,000 tire a day mark, although the output of balloon tires will probably not be affected. Output in this division will probably continue to increase.

Stewart Force Large and May Be Increased

NEW YORK, May 14—Wall Street received a message yesterday from C. B. Smith, president of the Stewart-Warner Speedometer Corp. of Chicago, which arrested a sharp decline in the price of Stewart-Warner stock. In his statement Mr. Smith declared that "rumors afloat about shutdowns, large lay-offs of help, stopping of dividends, etc., are ridiculous and unfounded."

Mr. Smith said that there has been no shutdown and none contemplated, and that the company is operating a large force and expects to increase it. With good weather, he said, the automobile business will come into its own.

HORACE DODGE ESTATE

DETROIT, May 14—H. B. Bloomer, executor of the estate of Horace Dodge, reports a balance May 1 of \$39,390,803. The estate comprises stocks, bonds, mortgages, notes, contracts and property, real and personal.

C. F. Kettering Heads Safety Committee

Is One of Five Men Who Have
Accepted Chairmanships in
National Movement

WASHINGTON, May 14—C. F. Kettering of the General Motors Research Corp. is one of the five men of national prominence in their respective fields who have accepted chairmanships of committees to cooperate with Secretary of Commerce Hoover and a joint committee representing national organizations that are engaged in an effort to coordinate measures to improve safety in traffic.

As chairman of the Committee on Motors, Mr. Kettering will face problems dealing with automobiles and their mechanical equipment, such as brakes, lights, bumpers and safety devices, the requirements for which vary widely in the various States. This committee will also consider such questions as the limitation of the weight and size of trucks, the examination of mechanical equipment and other essentials toward uniform safety measures.

Other Committee Heads

Besides Mr. Kettering, the men who have accepted committee chairmanships follow: W. N. Steuart, director of the United States Census Bureau, Committee on Statistics; F. A. Delano, chairman of the Washington Federal City Committee, the Committee on City Planning and Zoning; Prof. S. S. Huebner of the University of Pennsylvania, Committee on Insurance, and A. W. Whitney of the National Bureau of Casualty and Surety Underwriters, New York, Committee on Education.

Announcement of the appointment of the chairmen was made by Col. A. B. Barber, who has been asked by Mr. Hoover to act as director of the activities of the safety conference. Colonel Barber, who has charge of the Transportation and Communication Department of the Chamber of Commerce of the United States, has been loaned to Secretary Hoover to assist in this work.

Duties of Committees

The Committee on Statistics will undertake the study of the causes, location, frequency and severity of accidents. In this work this committee will have the advantage of studies already under way by the National Safety Council and other organizations with a view to developing uniformity in methods of securing such information. After such methods have been devised, plans will be laid for putting such information into forms of greatest usefulness both for the joint committees and the communities of the nation.

The Committee on Insurance will study the preventive effect of ratings, the problem of the so-called compulsory insurance for motor vehicles, the selection of

risks, the classification of risks by record, certification of titles and other matters. The insurance rating, it is pointed out, has been extensively developed, and is directly based on the traffic accidents in any given locality. Activities of insurance companies and their bureaus are expected to be of considerable assistance in arousing the country to the value of accident prevention.

The Committee on Education will have at the outset the task of outlining a program for training experts who will be able to carry information about prevention of traffic accidents into the home, the school, public gatherings of any sort, and wage a vigorous campaign for keener attention on the part of the individual. It is expected that many national organizations, including women's clubs, boys' and girls' organizations, labor bodies and business men's groups will be invited to participate in this committee's work and to support it in the local communities.

It is expected that tentative selections for chairmanship of committees on control of traffic, motor licensing and construction and highway engineering will be announced in the near future.

Mechanics Heading List of Paige-Jewett Buyers

DETROIT, May 14—Distribution of Paige-Jewett cars according to occupational classification of buyers shows mechanics, which includes skilled workers generally, to lead with 11.34 per cent. Merchants took 11.13 per cent of the output, and salesmen 8.86 per cent. Executives and manufacturers with 8.56 per cent were next in order. The four above mentioned classes are noted by the factory as leading persistently during the last several months.

Women purchasers absorbed 7.12 per cent of the output, this classification including all women buying in their own names. Other purchasers by classification and the percentages taken were:

Building Trades	5.98	Newspaper, Printing	1.7
Real Estate, Insurance	4.95	Taxi, Livery	1.55
Physicians and Dentists	3.8	Garage, Accessories	1.49
Transportation employees	3.77	Engineers, Architects	1.49
Clerks, Accountants	3.56	Teachers, Clergy	1.16
Farmers	3.02	Personal Service	1.16
Political	2.21	Bankers, Brokers	1.13
Hotel, Restaurant	1.97	Lawyers	.86
Retired	1.82	Miscellaneous	3.74
		Occupation not given	7.63

CORRECTION

C. K. Olberg, receiver for the Fox Motor Car Co. of Philadelphia, denies the sale of the property for \$230,000 as reported in AUTOMOTIVE INDUSTRIES, issue of April 24. Mr. Olberg states that by order of the court the company's real estate was offered at public auction April 16 and while a bid was made, it was not confirmed by the court. The receiver therefore still is in charge of the property, he says, and offering it for sale.

Committee Revises By-Laws of A. A. A.

Provision Made for Entrance of
Clubs and for Handling Routine Management

NEW YORK, May 13—A revision of the by-laws of the American Automobile Association was effected at a meeting of the Executive Committee here last week, one of the steps made necessary in the uniting of this association with the National Motorists Association.

Under the new by-laws, N. M. A. clubs and State associations are taken into A. A. A. membership upon application, where they are not in competition with existing clubs or associations of the A. A. A. Where A. A. A. clubs were in existence previous to the formation of the N. M. A., and where N. M. A. clubs have been formed, the A. A. A. organizations are recognized. Similarly, where N. M. A. clubs have been started and since their formation A. A. A. bodies have been organized for competitive purposes, the latter will have to affiliate with previously formed N. M. A. clubs to gain recognition.

The routine management of the A. A. A. will be handled by an executive committee of eleven, which will have all the powers of the Board of Governors when the latter is not in session, but all the acts of the Executive Committee will be subject to the approval of the Board.

After revising the by-laws, the Ohio State Automobile Association, with the largest membership of any organization in the N. M. A., applied for A. A. A. membership. It will be taken in as soon as the Mahoning Motor Club, which is in competition with the Youngstown Automobile Club, either withdraws from the Ohio State association or unites with the Youngstown club.

Tractor Sales in South Show 12 Per Cent Gain

ATLANTA, GA., May 12—A marked improvement in tractor and power farming equipment sales the last few weeks is shown in reports by the seven larger distributors of the South, a gain of 12 per cent in the sales volume during March being indicated, as compared with February, and a gain of nearly 50 per cent over January.

As compared with last year, however, March sales merely held their own, but the reports given were very optimistic as regarded the outlook, predicting a good improvement in April and May sales over those of last year, and a gain for the spring months of about 12 to 15 per cent.

At the present rate the spring volume this year will be the largest in the last four or five seasons, though conditions appear to be somewhat spotty. Primary sales of tractors have been in the Georgia and East Tennessee territory.

Detroit Sales Mount with Better Weather

Retail Deliveries of New Cars in
April Total 9,068, an In-
crease Over March

DETROIT, May 14—Sales for the first four months of the year in the Detroit district show an increase of 34.5 per cent over the corresponding period in 1923, according to a bulletin by the Detroit Automobile Dealers Association. The figures are compiled from registrations in the office of the Secretary of State. This increase in new car business is considered phenomenal in view of the record sales in 1923.

Since Jan. 1 there have been delivered to owners 26,215. For the same months last year the total was 19,485. April led with 9068 which compares with 6784 in the year previous, and 8368 in March of this year. The first few days of May have been marked by increases over the same days in April and it is probable, the association declares, that more than 10,000 cars will be placed in owners' hands.

Gain Is in Open Cars

The gain over March is represented almost entirely in open cars, the figures in open and closed models for the two months being 3863 and 5205 for April and 3309 and 5059 for March. This would indicate definitely that better weather has helped sales.

Comparison of April this year with last further bears out the belief that weather is probably the most important element in holding back business this year at least so far as this district is concerned. Open car sales in April, 1923, were 3900 as compared to 3863 this year. Closed car business in April, 1923, was 2884 as compared to 5205 for the month just closed.

Ford deliveries in April this year were 5014, of which 2131 were open and 2883 closed. This was 55 per cent of the total. Combined with other makes in the light car class the total was 6173 or 68 per cent. Total deliveries in the \$1,000 price class and under were 7396 or 80 per cent of the month's business; medium priced totals were 1427 or 16 per cent, and high priced lines were 257 or the remaining 4 per cent.

Ford 34 Per Cent of Total

In April of last year, the Ford total was 2333 or 34 per cent of the total. All low priced lines delivered 3869 or 57 per cent; \$1,000 and under deliveries were 4754 or 70 per cent; medium priced lines 1771 or 26 per cent, and high priced lines 224 or the remaining 4 per cent. In March this year Fords were 57 per cent of the total, low priced lines 71 per cent, \$1,000 and under, 80 per cent.

Companies leading in deliveries other than Ford were Chevrolet, 826; Dodge Brothers, 411, Hudson-Essex, 401; Buick, 381; Studebaker, 307; Overland, 167; Maxwell, 161; Oldsmobile, 127; Star, 123;

Oakland, 120; Jewett, 117, and Hupmobile, 116.

Truck business for the month totaled 741 deliveries, which compares with 674 in March and 604 in April last year. Of the total 458 were Fords. Chevrolet had 27, Dodge Brothers, 26; Reo, 25; Federal, 22; Mack, 20; Gotfredson, 19; G. M. C., 17; White, 15; New York, 12, and Auto-car, 10. Fifteen tractors were delivered.

Slow Sales Not Evident, Chicago Statistics Show

CHICAGO, May 13—Chattel mortgage totals on the books of the Central Auto Finance Association, as well as registration figures supplied by the office of the city license collector, fail to give evidence of slow business for the first four months of the year on the part of local automobile dealers.

The Cook County chattel mortgages on automobiles listed by the Central Auto Finance Association for five successive weeks, ending May 3, numbered 3583, compared with 3165 for the five weeks ending March 29. Totals for the weeks ending May 3 and April 26 are nearly double any other week in May, showing perhaps the difference in somewhat improved weather conditions.

Registrations so far this year as compared with all of 1923 are as follows:

Reg. from Jan. 1, 1924 to April 30, 1924	Reg. for all of 1923
Motorcycles	1,283 2,211
Passenger cars 35 hp. or less	202,544 213,440
Passenger cars over 35 hp.	5,087 5,551
Trucks, ton or less	25,671 26,145
Trucks, over 1-ton	14,469 13,907
Demonstrators	1,354 1,355
Transfers	1,125 2,841

R. E. Gardner, Jr., Home; Spent Month in Europe

ST. LOUIS, May 12—Russell E. Gardner, Jr., president of the Gardner Motor Co., has returned from a four weeks' stay in Europe, where he went for the purpose of studying conditions in the automobile business.

Mr. Gardner studied factory conditions in London, Paris, Lyons and Brussels and also observed the use of automobiles on European streets and highways.

He reports the little use made of balloon tires in Europe now, and states they have been adopted as optional equipment on only some of the larger cars.

Relative to four-wheel brakes, he said:

Four-wheel brakes are becoming increasingly popular. And outside of England, it is practically impossible to find any car without such equipment, especially any car that weighs more than 3000 lb. From their experiences with four-wheel brakes extending over a period of twenty years the Europeans have about reached the conclusion that the only practical durable type is of the mechanical variety.

Mr. Gardner said that the Dawes report has had a very beneficial effect on business in Europe.

Casings Show Gain in March Shipments

More Shipped Than in February,
but Not as Many as in Corre-
sponding Month, 1923

NEW YORK, May 12—As in the case with February, statistics compiled by the Rubber Association of America show that in March inventory of pneumatic casings continued to run in excess of the same month a year ago, while production and shipments fell off.

The March inventory showed an increase of 92,483 casings, production a decrease of 438,034, and shipments a falling off of 420,363.

Statistics for the full year 1923 and for the first three months of this year are as follows:

PNEUMATIC CASINGS				
1923	No. Mfrs. Report- ing	Inven- tory	Produc- tion	Ship- ments
January	62	4,695,968	3,127,270	2,994,297
February	60	5,224,387	3,217,987	2,588,639
March	58	5,670,601	3,865,726	3,322,637
April	56	6,088,272	3,539,326	2,976,160
May	57	6,906,594	3,659,986	2,757,764
June	55	7,040,600	2,956,943	2,502,185
July	54	6,471,124	1,992,989	2,539,425
August	58	6,058,387	2,355,915	2,807,432
September	60	5,397,557	2,029,581	2,623,775
October	59	4,876,352	2,361,340	2,819,583
November	55	4,689,329	2,399,725	2,456,296
December	56	4,329,300	2,437,148	2,603,617
1924				
January	56	4,808,084	3,220,292	2,785,335
February	55	5,265,133	3,278,674	2,801,000
March	57	5,783,084	3,427,692	2,902,274

INNER TUBES				
1923	No. Mfrs. Report- ing	Inven- tory	Produc- tion	Ship- ments
January	62	5,838,310	3,951,885	3,748,651
February	60	6,771,958	4,039,202	3,001,697
March	57	7,740,945	4,375,414	3,828,315
April	55	8,394,184	4,259,558	3,535,635
May	57	9,292,223	4,317,537	3,414,115
June	54	8,924,326	3,590,011	3,581,060
July	52	7,527,281	2,666,354	3,942,247
August	53	6,950,578	3,577,922	4,304,034
September	55	6,457,455	3,264,575	3,683,574
October	55	6,898,425	3,855,244	3,595,737
November	53	6,693,639	3,451,716	3,422,426
December	52	6,318,446	3,288,665	3,497,472
1924				
January	51	6,720,247	3,887,959	3,475,713
February	50	7,339,307	4,067,631	3,329,504
March	53	8,157,704	4,218,950	3,420,723

SOLID AND CUSHION TIRES				
1923	No. Mfrs. Report- ing	Inven- tory	Produc- tion	Ship- ments
January	11	262,462	83,343	60,611
February	11	270,191	75,457	63,394
March	11	265,843	79,788	77,144
April	10	260,631	71,468	72,609
May	10	268,323	77,288	67,147
June	10	283,425	72,445	52,126
July	10	263,891	42,345	45,219
August	10	262,810	48,141	45,925
September	10	249,379	37,074	45,971
October	10	234,945	37,285	48,065
November	11	213,686	32,577	49,471
December	10	178,088	34,937	62,408
1924				
January	10	182,782	53,604	43,375
February	10	188,519	60,646	49,370
March	10	203,608	68,662	57,847

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is represented as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouse, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as domestic stock.

"Shipment" includes only stock forwarded to a purchaser and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

Retail Truck Users Talk Over Problems

Association Convention Attracts Representatives of Many Department Stores

DETROIT, May 14—Representatives of more than 250 department stores from the United States and Canada attended the eighth annual convention of the Retail Delivery Association in Detroit last week, for the discussion of problems connected with the retail distribution of their merchandise by motor vehicles. This is one of the very few associations in the country that has been in existence for eight years, and was formed with the express object of studying the problems connected with the use of the motor truck in delivery work.

With practically all of these stores motor delivery is now recognized as one of the departments of the business rather than as stepchild, as it has heretofore been considered. These business houses recognize that delivery is one of the essentials in their business, in fact, as the last link in contact with the purchaser.

The convention program dealt with the various problems of delivery work. One subject to receive considerable consideration concerned the use of the electric vehicle in delivery service where distances are short and congestion great. E. E. La Schum, superintendent of motor vehicles for the American Railway Express Co., presented a lengthy paper on the electric.

Working on Composite Vehicle

The Retail Delivery Association for some months has had a committee working on a composite delivery vehicle for department store deliveries. From questionnaires already received the following are some of the specifications that these people would like in their delivery vehicles: Optional equipment of magneto and carbureter; gasoline tank under front seat with gravity feed and proper draining facilities; four-speed gearset integral with the engine; full floating axle with banjo type housing; detachable cylinder heads; two part crankcase; multiple disk clutch; flanged fan pulley; forced water circulation; vertical-tube radiator; worm-wheel type of steering gear; forced feed and splash engine oiling system, with oil indicator on dash, as well as in crankcase.

This group of users of motor trucks asks for closer cooperation between the manufacturers and themselves, in order that the problems of operation and maintenance can be studied.

In connection with the convention which continued for four days, an exhibit was held in the ballroom of Hotel Statler.

I. A. WORTHINGTON DROWNS

NEW YORK, May 14—Ira A. Worthington, sales manager of the Armstrong Rubber Co. of this city, which operates

the West Haven Rubber Co. at West Haven, Conn., was drowned yesterday near Long Beach, L. I. Mr. Worthington had bought a new motorboat and was taking it to his summer home. Attempting a landing in a dinghy, he lost his life when heavy seas swamped the boat.

Mr. Worthington was well known in the tire industry, being identified with the Trent Rubber Co. of Trenton, N. J., previous to joining the Armstrong company.

FINANCIAL NOTES

Mack Trucks, Inc., officially reports net profit of \$1,430,307 for the first quarter after all deductions, confirming the estimate made a week ago. This is equal to \$4.04 a share earned on the 283,108 shares of common stock outstanding, and compares with \$4.34 a share in the corresponding period last year. The balance sheet as of March 31 shows net current assets of \$28,926,962 against net current liabilities of \$2,775,700. The current assets include \$3,301,882 cash, \$8,791,166 accounts receivable and inventory valued at \$16,833,913. Profit and loss surplus is \$18,836,507.

Continental Motors Corp. reports net earnings of \$890,000 for the first quarter, compared with \$430,000 in the corresponding period of last year. The company also reports that earnings for April were about \$500,000, or greater than the earnings for the entire first quarter of 1923.

Stewart-Warner Speedometer Corp. reports net profit of \$1,496,700 after deductions, for the first quarter, as against \$1,827,973 in the first quarter of 1923. This is equivalent to \$3.15 a share earned on the outstanding 474,980 shares of no par stock, against \$3.84 a year ago.

International Harvester Co.'s annual report shows a net profit for 1923 of \$10,274,376, compared with \$5,540,767 in 1922. Current assets were \$164,500,000 and current liabilities, \$21,100,000 both showing little change from 1922.

Gray & Davis, Inc., earned \$46,481 in the first quarter after all deductions. Of this amount \$21,000 was shown in March. From this it is expected the company will show a surplus of \$75,000 for the first half.

Motor Wheel Corp. declared its regular quarterly dividend on common stock of 2 per cent, payable June 20 to stock of record June 10.

New Jersey Plant Leased for Fokker Manufacture

NEW YORK, May 14—The Atlantic Aircraft Corp. has leased, with the privilege of purchasing the plant of the Wittemann Aircraft Corp. at Hasbrouck Heights, N. J., which will be used for the manufacture of Fokker airplanes as designed by Anthony H. G. Fokker. Production will start at once, with A. Rancis Arcier, formerly of the Handley-Page staff in England, as chief engineer.

The directors of the new corporation include Major Lorillard Spencer, Frank R. Ford of Ford, Bacon & Davis, engineers; Charles S. Guggenheimer of Guggenheimer, Untermyer & Marshall; Anthony H. G. Fokker and R. B. C. Noorduyn, who has been the Fokker representative in this country for the last three years.

BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

The principal tendency last week was still toward reduced industrial activity, smaller trade volumes and lower commodity prices. A striking exception to the general trend is the case of retail trade, which remains at very high levels.

The production of pig iron in April amounted to 3,233,428 tons, comparing with 3,446,086 in March and 3,549,736 in April, 1923. The daily average of 107,781 tons compares with 111,809 in March and 118,324 a year ago. The output of steel ingots during the month totaled 3,386,256 tons, as against 4,187,942 in March and 3,963,736 a year ago, while the daily average was 130,241 tons, against 161,075 in the preceding month and 158,549 in the corresponding period last year.

Unfilled orders on the books of the United States Steel Corp. on April 30 amounted to 4,208,447 tons, as compared with 4,782,807 a month before and 7,288,509 at the end of April, 1923.

Car Loadings Greater

Car loadings in the week ended April 26 numbered 878,892, as against 876,923 in the preceding week and 962,578 a year ago. Net operating incomes of Class I railroads in March represented an annual return of 5.31 per cent on their tentative valuation, comparing with 5.84 per cent in March, 1923.

Discounts by Federal Reserve banks declined \$6,900,000 during the week ended May 7. Bills bought in the open market declined \$37,200,000, while holdings of Government securities increased \$9,200,000.

Loans of reporting member banks increased \$67,000,000 during the week ended April 30, an increase of \$91,000,000 in loans secured by stocks and bonds being partially offset by a decline of \$24,000,000 in "all other" loans. Investments declined \$18,000,000 and accommodation at Reserve banks \$34,000,000, while net demand deposits increased \$150,000,000 and time deposits \$23,000,000.

Increased ease developed in money rates last week. Call loans were quoted at 3½ per cent throughout, while time loans declined steadily, touching 3½ per cent for the shorter maturities.

Henry Ford to Referee Race at Indianapolis

DETROIT, MICH., May 15—Henry Ford has accepted an invitation to referee the Indianapolis race, according to announcement at his Dearborn offices. As referee, Mr. Ford will be in complete charge of the race and officials, subject only to review by the contest board of the American Automobile Association. W. S. Gilbreath of the Detroit Automobile Club will be starter.

Mr. Ford was a driver in automobile races himself years ago and he has acted as referee several times at racing events.

Itinerary Outlined for Road Delegates

Visitors from Latin America Will Be Taken on Three Weeks' Tour Next Month

WASHINGTON, May 13—Plans have been completed for the road tour of delegates from 20 Latin American countries who will make a field study of highways and highway transportation in the United States as guests of the Highway Education Board. The tour will last three weeks.

After two days of entertainment in Washington, June 2 and 3, during which they will be received by President Coolidge and Secretary of State Hughes, the delegates will leave for Raleigh, N. C., the first stop on the itinerary.

They will be received by Governor Morrison at the Executive Mansion on the morning of June 4, concluding the forenoon with an inspection of the offices of the State Highway Commission, guided by Frank Page, State highway commissioner, and Charles M. Upham, State highway engineer.

Stops in North Carolina

North Carolina cities included in the itinerary call for temporary headquarters to be established at Durham, Greensboro, Winston-Salem, High Point, Asheville, Chimney Rock, and others. Altogether seven days will be spent studying the highways of that State, where conditions are held to be similar to those to be found in many Latin American countries, both as to soil, climatic and topographic conditions, and other characteristics. A close study will be made of highway construction and maintenance in all the phases that North Carolina can reveal.

From North Carolina the party will go by rail to Springfield, Ill., where special attention will be given to the maintenance and oiling of black soil earth roads, and to the various methods of grading in alluvial soil.

Before reaching Illinois, however, the party will stop at Lexington, Ky., and Cincinnati.

Reception in Illinois

After a reception by Governor Len Small of Illinois and his staff an inspection will be made of the Bates Test Road. Members of the group will motor to Bloomington and spend the evening in Peoria.

Three days will be spent in Minnesota, the party arriving in St. Paul on Sunday, June 15. Governor J. A. O. Preus and State Commissioner of Highways C. M. Babcock will welcome them to the State, and afford the visitors an opportunity to inspect the road construction being made through sparsely settled regions of the country, through low-lands, and to see the road building and maintenance methods in vogue in that State. Duluth, Hibbing, St. Cloud and other cities in addition

to St. Paul and Minneapolis will have an opportunity to entertain the Latin Americans before they leave Duluth on the evening of June 17 for Madison, Wis.

At Madison Governor Blaine has been invited to receive the visitors. From Madison they will motor to Milwaukee, and, spending the evening there, entrain for Michigan by way of Chicago.

Details of the tour at Chicago, Detroit, Cleveland, Akron, Buffalo, and elsewhere, are yet to be announced.

INDUSTRIAL NOTES

FitzJohn Manufacturing Co., Muskegon, Mich., now is located in its new factory, manufacturing bus bodies at the rate of two units a day. Another addition, 90x200, will be built at once, which will give the company a capacity of 100 complete bus bodies a month.

Cramer Manufacturing Co., Milwaukee, manufacturing auxiliary pumping systems for Fords and other automotive cooling devices, has changed its corporate title to Milwaukee Circulating Pump & Manufacturing Co., to designate more clearly the principal line of production.

Wisconsin Metal Products Co. of Racine, Wis., will erect a new plant on a new site in that city. The present plant has been outgrown. While the concern manufactures a general line of metal stampings, the principal business is in automotive and radio specialties and equipment.

Massachusetts Defeats Bill to Regulate Buses

BOSTON, May 12—Massachusetts will not allow the Public Utilities Commission to regulate motor buses, the Legislature this week defeating the bill drawn by the Public Works Department and designed for such regulation.

This bill was the outcome of an effort a year ago to put both buses and trucks under the supervision of the commission. At that time opposition by motorists was such that the plan was side-tracked. A compromise was worked out finally whereby buses would be put under the commission and freight-carrying trucks would remain under the jurisdiction of the Public Works Department.

Two bills were introduced into the Legislature this year to have this done. There was no opposition when they were heard, but when final action was taken the bus bill was defeated. The bill to regulate trucks has passed all the committee stages.

G. M. C. EMPLOYMENT

NEW YORK, May 14—The General Motors Corp. reports that its employees totaled 94,647 last March, representing a reduction of approximately 7000 from February, which was the record month, but an increase of 55,000 over March, 1923, of nearly 39,000 over March, 1922, and more than 50,000 over March, 1921. These figures do not include employees of the Fisher Body Corp. and other affiliated concerns.

Rubber Restriction Sought by New Plan

British Considering Changing of Methods Following Failure of Stevenson Act

(Continued from page 1099)

sador and the rubber tire manufacturer represented the most opposite views regarding the growing of crude rubber.

Failure of the restriction act to produce the desired results is attributed by some of the crude rubber growing representatives here to the fact that the Dutch and the Japanese planters located outside of British territory refused to cooperate in the plan and have been selling their rubber regardless of price.

More than 500 men, most of whom are connected or interested in the rubber industry here, attended the dinner at which the British representatives spoke. The meeting was held at the armory.

Philippine Site for Rubber

WASHINGTON, May 14—A vast tract of land has been located in the Philippines with soil well adapted for rubber plantations, according to announcement by Secretary of Agriculture Wallace.

The lands are on Mindanao, an island about the size of Indiana, and on adjacent smaller islands in the Philippines.

At present there are three producing plantations on the island of Basilan and one in the interior of Mindanao. The largest plantation consists of 180,000 trees. Ordinarily plantations can be brought to the tapping age in about five years. The oldest rubber on the island is seventeen years old.

News of the find was brought by a returning party of investigators working under a \$500,000 Congressional appropriation. The party was under the leadership of Mark Baldwin of the Department of Agriculture, Mr. Baldwin serving in the capacity of soil expert.

Discovery of the new rubber producing lands, officials declare, offers an opportunity for American capital to engage in an important industry in territory within the restrictions of its own Government.

30,533 Miles of Road Built by Federal-Aid

WASHINGTON, May 14—Completed Federal-aid roads now total 30,533 miles, according to the Bureau of Public Roads of the United States Department of Agriculture. Of this, 7236 miles have been completed during the present fiscal year, beginning June 30, 1923.

The construction season now getting under way in most States finds 16,652 miles of Federal-aid road under construction, and 2602 miles embraced in projects which have been approved and much of which will get under construction during the season.

Calendar

SHOWS

- Jan. 3-10—New York, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Bronx Armory.
Jan. 24-31—Chicago, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Coliseum and First Regiment Armory.

FOREIGN SHOWS

- May 23-June 1—Oporto, Portugal, Automobile and Aviation Exposition, Exposition Offices, 108 rua de Santa Catarina, Oporto.
May 31-June 15—Turin, Italy, Automobile Show.
Aug. 23-Sept. 6—Toronto, Ont., National Automobile Show in conjunction with the Canadian National Exhibition under the sanction of the Canadian Automotive Equipment Association and the Automotive Industries of Canada.
Oct. 2-12—Paris, passenger cars, motor cycles, bicycles and

- accessories, Grand Palais.
Oct. 17-25—London, Annual Passenger Car Show, Olympia.
Oct. 22-31—Paris, motor trucks, stationary engines, garage tools and machine tools, Grand Palais.

RACES

- May 30—Indianapolis.
June 14—Altoona.
July 4—Kansas City.
Aug. 3—Lyons, France, European Grand Prix.
Sept. 1—Altoona.
Sept. 1—Syracuse.
Oct. 4—Fresno.
Oct. 19—Kansas City.
Nov. 24—Los Angeles.

CONVENTIONS

- May 19-22—Detroit, National Automotive Service Convention and Maintenance Equipment Show, under the auspices of the Service Division of the National Automobile Chamber of

Commerce, General Motors Building.

- May 19-23—Atlantic City, National Electric Light Association.
May 21-24—Detroit, International Motor Transport Congress under the auspices of the National Automobile Chamber of Commerce.
May 26-29—Cleveland, American Society of Mechanical Engineers.
June 3-4—Detroit, Midsummer Meeting of the Automobile Body Builders Association, Hotel Statler.
June 4-6—Boston, National Foreign Trade Convention.
June 23-25—Atlantic City, American Society for Testing Materials.
June 23-25—National Team and Motor Truck Owners Association.
June —Washington, Pan American Highway Congress, under the auspices of the Pan American Highway Mission.

Sept. 7—Monza Track, near Milan, Italy, Italian Grand Prix.

Sept. 22-26—Boston, Sixth Convention and International Steel Exposition of the American Society for Steel Treating.

S. A. E. MEETINGS

- May 22—Detroit Section, How the Engineer Can Help Solve the Service Problem, H. N. Davock, Packard; O. E. Hunt, Chevrolet; W. T. Fishleigh, Ford.
June 24-27—Summer Meeting of the S. A. E., Spring Lake, N. J.
Oct. 21-24—S. A. E. Production Meeting, Detroit.
Nov. 18-19—Joint Service Meeting of the S. A. E. with the N. A. C. C. Cleveland.
—Aeronautical Meeting at Dayton at the time of the Pulitzer Races.
January—S. A. E. Annual Meeting, Detroit.

British Empire Show Has Few New Models

(Continued from page 1098)

semi-circular metal casing, where, as might be imagined, it can hardly be termed accessible. The drive is taken to the rear axle by a short propeller shaft, while the two rows of seating are respectively in front of and behind the engine casing.

A great many makers show "Colonial" models, which differ but slightly from the standard type for the home market. The main variations, as a rule, are more ground clearance, stiffer springs, larger wheels and a lower gear ratio.

Low pressure tires are seen on only a few cars, and only about half a dozen cars have front wheel brakes, these being about equally divided between the Perrot and Rubery or Isotta Fraschini systems (with universally jointed camshafts extending from the frame sides and with camshafts held by bearings on the front axle beam respectively).

The truck exhibits include twenty different makes of gasoline chassis and nine steamers, some of the twenty-three makers in this section showing both types. No new models are shown at present, beyond those that appeared at the Olympia truck show last November and December, but a new 2-ton Maudslay may be put in position later.

In the building devoted exclusively to Canadian products, Buick, Oakland, Chevrolet, Oldsmobile, Ford and Overland are represented, the Oldsmobile Six being seen for the first time in England, for it is not at present on sale here.

Miles Visits Exhibition

NEW YORK, May 12—S. A. Miles, show manager of the National Automobile Chamber of Commerce, is back from a flying trip to England, prepared to handle the service show at Detroit next week.

While in England Mr. Miles visited the British Empire Exposition at Wembley, taking in, of course, the automobile display there.

In speaking of the display, Mr. Miles says:

This automotive exhibit is under the direction of the Society of Motor Manufacturers and Traders. The makers themselves have nothing to do with it, the society furnishing the attendants who represent the industry as a whole.

General Motors has an exhibit in the Canadian Building, showing one model each of its Canadian built cars.

It was interesting to note that for the first time uniform decorations are used in the automobile exhibit, something we have done ever since we first put on automobile shows. This is an innovation, however, that will not be followed at the annual Olympia show, for when the manufacturers themselves are the exhibitors they object to uniform decorations. Each wants a private office in his stand in which to meet big customers, so each desires individuality of decorations which is not possible if everything is uniform.

State Commission Sees Gasoline Cut Possible

BOSTON, May 14—Reporting to the Massachusetts Legislature as a result of a resolution passed six weeks ago ordering an investigation of gasoline prices in that State, the Commission on the Necessaries of Life says that "the wide spread of about ten cents a gallon now existing between the refinery and the consumer can be reduced materially."

"The Commission submits for consideration these suggestions," the report continued: "Elimination of so-called free service now given to attract trade; introduction of automatic self-service pumps, and the creation of large wholesale and retail stations in connection with the established lines of business having railroad sidetrack facilities, which would eliminate much of the expense of the tank wagon business."

Gasoline Production Reaches High Point

WASHINGTON, May 14—The gasoline refiners of the country continue to set new records in production, the output in March amounting to 743,248,292 gal., which surpasses by 48,000,000 gal. the previous high record, established in January, the Department of Interior announces. Statistics collected by the Bureau of Mines show also that a new high record in gasoline stocks was attained on April 1, when 1,571,404,667 gal. were on hand at refineries.

The figure represents an increase of practically 200,000,000 gal. over the former record of 1,374,000,000 gal., made on March 1. Production of gasoline in March of this year shows a daily increase of 3,630,546 gal., or 17.8 per cent, over the March, 1923, figures, and a daily increase of 605,396 gal., or 2.6 per cent, over the figures for February, 1924.

These figures are indicative of the normal annual trend in the production of gasoline during winter months, the output during this period being generally in excess of the consumption, in order to provide large storage reservoirs to supply the country during the summer motoring season.

Domestic demand for gasoline during March is reported by the Bureau of Mines as 462,020,385 gal., an increase of 3.5 per cent over the figures for March of last year and an increase of 6 per cent over the figures for February, 1924. Exports of gasoline decreased 18,455,988 gal. from the previous month.

MARKET IN ICELAND CLOSED

WASHINGTON, May 12—Iceland, as a market for automobiles and motor-cycles, although small, is to be closed for two years by an official decree of the Icelandic Parliament, just passed, according to notice sent to the Bureau of Foreign and Domestic Commerce.